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Original Article.

TYPHUS FEVER AT THE BOSTON CITY HOSPITAL.

By GEORGE C. SHATTUCK, M.D., BOSTON.

[From the Service for Tropical Diseases at the Boston City Hospital.]

THE work to be described was begun at a time when cases of typhus were being found among immigrants recently arrived in New York, and when it was feared that a serious outbreak of typhus might occur in Boston.

The objects were to learn the number of cases of typhus recorded at the City Hospital in recent years, to ascertain whether cases of typhus had been overlooked, and to determine the principal diagnostic difficulties relating to typhus in this locality. A study of typhus at the Massachusetts General Hospital was made along somewhat different lines by Dr. Roger I. Lee, in 1913.

PLAN OF WORK.

The plan of work consisted of carefully searching the case records filed under the diagnoses of typhoid fever, suspected typhoid, paratyphoid, influenza, febricula, and undiagnosed infections, for the ten-year period from the middle of 1921 back through 1911. In the records from and including the years 1916 through 1911, cases of febricula were looked up, and the diagnoses of influenza were exam-

ined from 1921 through 1916. Information about pneumonia and allied conditions was obtained by looking over about two-thirds of the cases diagnosed as pneumonia between the years of 1916 and 1910 and by examining all the records of the special service for pneumonia inaugurated in 1919. These records include diagnoses of influenza, bronchitis, coryza, pleurisy, empyema, and acute alcoholism with pneumonia.

The total number of case records examined was probably not less than 7,000. The preliminary work was done by my secretary, who was instructed to look for certain well-known features of typhus. I subsequently scrutinized the material selected by her.

The most interesting case histories were divided into the four following groups:

Group I.—Typhus fever: four cases (Nos. 1 to 4, inclusive).

Group II.—Probable typhus: five cases (Nos. 5 to 9, inclusive).

Group III.—Perhaps typhus: five cases (Nos. 10 to 14, inclusive).

Group IV.—Cases, certain features of which suggest typhus: an indefinite number.

It is noteworthy that among the fourteen cases of Groups I, II, and III, only three were females. The ages varied from 18 to 40 years. The records of patients less than 18 years old were not examined because of the greater difficulty of diagnosing typhus fever in the young. All but one of the patients were foreign-born. Ten of them had come from Russia, and of these

one had been in the United States only ten days, and another three weeks. All of these patients recovered.

Hospital diagnoses in Groups II and III (cases 5 to 14, inclusive):

DIAGNOSIS	NUMBER OF CASES
Fever of unknown cause or febricula 5	
(?) Typhoid fever and dermatitis medicamentosa	1
Typhoid fever	2
Pneumonia (probably lobar)	2

Case reports are appended.

The hospital diagnoses in Group IV include all of those above mentioned and the following other diagnoses:

DIAGNOSIS	NUMBER OF CASES
Influenza	a number of cases
Acute alcoholism with (?) typhoid	1
Bronchopneumonia with (?) measles 1	
Pleurisy with bronchitis	1

It was a surprise to find in the records no case of paratyphoid or of cerebrospinal meningitis in which the diagnosis of typhus seemed a possibility.

DISCUSSION OF DIAGNOSIS.

So much has been written on the differential diagnosis of typhus that only those diseases need be discussed here which are mentioned above. Recent detailed information on the clinical picture and concerning differential diagnosis can be obtained from other sources (Daniélopola,² Shattuck³).

Fever of unknown cause and febricula have been thrown together because either designation indicates that an etiological diagnosis was not made. Five cases (No. 5 and No. 6 in Group II, and No. 10, No. 11 and No. 12, in Group III) were so classified. Two other cases might be included. One of these (No. 7, Group II) was diagnosed, (?) typhoid and dermatitis medicamentosa. In the second (No. 14, Group III), the diagnosis of pneumonia was made not from the physical signs, but from the chart, which showed an abrupt fall of temperature.

It seems probable that typhus was not thought of as a possibility in these cases and that, had it been considered, some or all of them might have been so diagnosed.

Typhoid Fever. The positive Widal reaction, doubtless, was an obstacle in the two cases diagnosed typhoid (No. 8, Group II, and No. 13, Group III). At that time it was justifiable to consider a positive Widal reaction in the dilution of 1:50 in an uninoculated person as presumptive evidence for typhoid, but numerous observers have since shown that the Widal reaction may be positive in typhus in the same dilutions in which it is commonly positive in typhoid (Wilson⁴). Moreover, it is well known

that cases of typhoid occur in which there is an abundant eruption simulating that of typhus. In both cases above mentioned, the white count was increased—another point against typhoid.

The rash of typhoid generally first appears about the seventh day, sometimes later, whereas that of typhus is to be expected on or about the fifth day.

In Case No. 7, Group II, the Widal test was negative, and the diagnosis was (?) typhoid, dermatitis medicamentosa. A note says, "Unable as yet to find out what drug caused the erythema."

Paratyphoid Fever. Within a short time, at the Boston City Hospital, a case of undiagnosed fever was seen in which there was an eruption suggestive of typhus. Cultural methods and Widal tests with typhoid bacilli and paratyphoid A and B gave negative results. The eruption was in part petechial, came late, and fresh spots apparently developed on succeeding days. The onset, the duration of the fever, and the rapid defervescence suggested typhus. It seems not impossible that the case may have belonged to the paratyphoid group. At any rate, paratyphoid is a disease which may have these characteristics.

Another case having a profuse rose-red eruption without petechial elements, and sparing the face, was believed to be one of food-poisoning.

The protean picture of paratyphoid has been pointed out by a number of European writers, who emphasize the fact that it may be very difficult to distinguish from typhus.

Pneumonia. One of the appended cases diagnosed pneumonia (No. 14, Group III) has already been referred to in the paragraph headed "Fever of Unknown Cause." The signs in the lungs were vague in this case. In the case of No. 9, Group II, signs of consolidation were definite. It should be stated, however, that pulmonary lesions of great variety, including pleurisy, bronchitis, and pneumonia, are common in typhus, so that, in the presence of a rash, the possibility of typhus should be borne in mind in such cases. A case of the fourth group, diagnosed "bronchopneumonia and (?) measles," and that diagnosed as "pleurisy with bronchitis," are interesting from this standpoint.

Influenza. As regards influenza, it may be said that the rash seen more or less frequently in this disease may so closely simulate that of typhus as to cause grave doubt as to the correct diagnosis. This was notably true in an epidemic of influenza which occurred some years ago in Paris (Wagener⁵). Moreover, redness of the throat, catarrhal symptoms and bronchitis, are commonly seen in both diseases. Among the cases of this series diagnosed influenza, there were a number having rashes suggestive of typhus, but none in which the clinical

cal picture, as a whole, would have justified the diagnosis of typhus.

Measles. Several writers have pointed out the fact that it may be difficult to distinguish typhus from measles. When Koplik's spots are absent in the early stage of measles or in the later stages in cases in which the rash has been more than usually petechial, great uncertainty might undoubtedly arise. Zeiss⁶ saw coincident epidemics of typhus and of measles of a virulent type in adults in Smyrna, and says that the differentiation of the two diseases by clinical means in the early stages was extremely difficult. Recourse was had to the proteus reaction described below.

The exanthem of measles is said to differ from that of typhus by showing a brighter red color in its early stage, by beginning on the head, and by a greater tendency to confluence and grouping of the lesions (Michl⁷). Moreover, in measles, the exanthem generally appears distinctly, if not profusely, on the face; whereas this occurs but rarely in typhus.

In one case of the fourth group, the diagnosis was bronchopneumonia and (?) measles.

Cerebro-spinal fever may simulate typhus, or *vice versa*. The eruption of the former may be very like that of the latter and meningeal symptoms, consisting of slight stiffness of the neck and a slight Kernig's sign, as well as increase of pressure in the cerebro-spinal fluid and a high cell-count are commonly found in severe case of typhus. Typhus, as seen in the United States, is generally of a mild type in which meningeal symptoms are not, as a rule, found. They were present in Case No. 5 of Group II, in which the recorded diagnosis was "Pyrexia of Unknown Origin."

Eruptions in septic conditions may resemble the exanthem of typhus. A short time ago I saw a case of staphylococcus septicemia having a petechial rash. The distribution was not like that in typhus, however, and fresh lesions appeared on succeeding days. Walko⁸ mentions, under this head, streptococcus, staphylococcus, and pyocyanus sepsis.

Drug Eruptions. Arsphenamine requires special mention. Dr. Edwin H. Place, of the Boston City Hospital, told me recently that in past years he has seen many rashes strongly suggestive of typhus which were caused by arsphenamine. A case which probably belonged to this category was seen recently at the City Hospital.

The eruption in Case 6, Group II, was at first attributed to aspirin, but this view seems later to have been discarded. In Case No. 7, Group II, the eruption was attributed to an unknown drug.

There would seem to be a possible danger of mistaking a drug eruption for the exanthem of typhus, or *vice versa*.

Alcoholism. In the case of the fourth group,

diagnosed as alcoholism with (1) typhoid fever, the rash is described as consisting of many maculo-papules resembling rose-spots. They were of pin-head size and were scattered over trunk, arms, and upper legs. The patient died, but there was no autopsy. Although the diagnosis of alcoholic delirium was probably correct in this case, the question of typhoid remained in doubt, and typhus seems not to have been considered. I have seen a case of delirium of the alcoholic type in typhus. Alcohol may or may not have been a factor in this case, but active delirium is not uncommon in the early stage of severe typhus in persons who are not apparently alcoholic.

PROGRESS IN METHODS OF DIAGNOSIS.

The recognition of atypical cases, especially when they occur sporadically, is difficult or impossible by clinical methods even when supplemented by the common laboratory tests. This is true, above all, in children in whom typhus generally runs a mild course (Brohm⁹).

A voluminous literature on the subject of typhus has developed since 1915. Various clinical signs and numerous laboratory tests of secondary importance have been described.

Two outstanding methods of diagnosis have emerged. Firstly, the proteus reaction of Wilson, Weil and Felix, and secondly, the discovery of a microscopic pathology characteristic of typhus.

The proteus reaction is an agglutination test for the purposes of which an emulsion of a special strain of *B. proteus* is mixed with dilutions of serum from the patient. The special strain is designated as proteus X19 (Wilson,⁴ Arkwright,¹⁰ Fairley,¹¹ Wolff,¹² Weil and Felix¹³).

The pathological changes are found especially in the skin and in the central nervous system. Bits of skin excised during life can be used for diagnostic purposes (Wolbach¹⁴).

A very brief review of some of the laboratory methods is given by v. Gutfeld.¹⁵ The technic for the proteus reaction has been described by Weil and Felix¹³ and by v. Gutfeld.¹⁵

SUMMARY AND CONCLUSIONS.

1. Examination of the records of the Boston City Hospital for the past ten years, shows that during that period of time four cases have been diagnosed as typhus fever.

2. In a few cases diagnosed otherwise, a diagnosis of typhus would probably have been justified. The signs in another small group of cases are highly suggestive of typhus.

3. Numerous cases, probably not typhus, had eruptions suggestive of typhus.

4. It would seem probable that a few cases of typhus fever escaped detection. The records indicate that the possibility of typhus was not considered in these cases.

5. The diagnosis of typhus is easy in typical cases, but it is important to realize that typhus may simulate a number of other common diseases, and that they in their turn may produce eruptions very suggestive of, or even similar to, that of typhus.

6. The diagnosis of typhus in children is more difficult, as a rule, than in adults, because typhus in children generally runs a very mild course.

7. The diagnosis of typhus in atypical cases may be difficult or impossible by the use of known clinical methods, even when supplemented by the ordinary diagnostic procedures of the laboratory.

8. Two of the newer methods of diagnosis are especially valuable. These are: (a) the proteus reaction of Wilson, Weil and Felix, and (b) microscopic examination of bits of skin excised during life.

Acknowledgments and thanks are due to the Superintendent and to the members of the Visiting Staff of the Boston City Hospital for permission to utilize the material in the records.

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- ¹ Lee: BOSTON MEDICAL AND SURGICAL JOURNAL, 1913, V. 163, p. 122.
- ² Daniélopou: "Le Typhus Exanthématique," Bucharest, 1919.
- ³ Strong, Shattuck, Sellards, Zisser and Hopkins: "Typhus Fever, with Particular Reference to the Serbian Epidemic," Harvard University Press, 1920.
- ⁴ Wilson: Jour. of Hyg. 1920, V. 19, p. 115.
- ⁵ Wagener: Med. Klin. XV, No. 25.
- ⁶ Zeiss: Arch. f. Hyg. 1918, V. 87, p. 246.
- ⁷ Michl: Wien. kl. Woch. 1920, V. 23, p. 1127.
- ⁸ Walko: Wien. kl. Woch. 1916, V. 291, p. 313.
- ⁹ Brohm: Daily Rev. of Foreign Press, War Office, Lond. Med. Suppl. 1918, Vol. 1, p. 384.
- ¹⁰ Arkwright: Proc. Roy. Soc. Med. Lond. 1919-20, V. 13, Sec. Med. Part II, p. 87.
- ¹¹ Fairley: Jour. of Hyg. 1919, V. 18, p. 206.
- ¹² Wolff: Munch. med. Woch. 1919, V. 66, p. 507.
- ¹³ Weil and Felix: Munch. med. Woch. 1918, V. 65, p. 17.
- ¹⁴ Wolbach, Todd and Palfrey: "The Etiology and Pathology of Typhus," Harvard University Press, 1921.
- ¹⁵ v. Gutted: Med. Klin. 1919, p. 691.

CASE HISTORIES.

In the case histories, all non-essential information is omitted. Temperatures after defervescence remained normal except in Case 6.

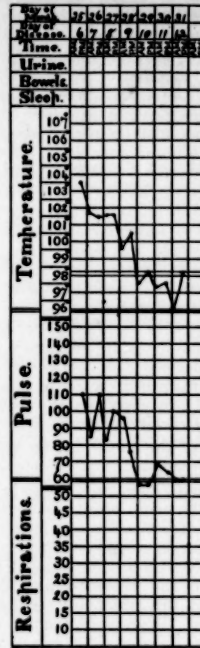
GROUP I.

Case 1. Man. Age, 26. Carpenter. Born in Russia. Lives in Boston. Admitted to hospital May 25, 1913.

Past History—Mother says patient had "typhus fever" (? typhoid) at age of nine, in Russia. Present Illness—Six days ago felt weak. Later, on the same day, had a chill, and chilly sensations on the following day with marked weakness. Two days ago, induced vomiting for relief of nausea. Slight headache at times, no pain, no nosebleed, no diarrhea.

Physical Examination—Moderate prostration. Conjunctivae clear. Throat, slight redness. No Koplik spots. On arms, chest, back and abdomen, there is a blotchy erythema dull red in color. Some of the lesions have become pustular. The size of the blotches is irregular.

5/26. Trunk covered with macular eruption which does not disappear on pressure.



CASE 1.

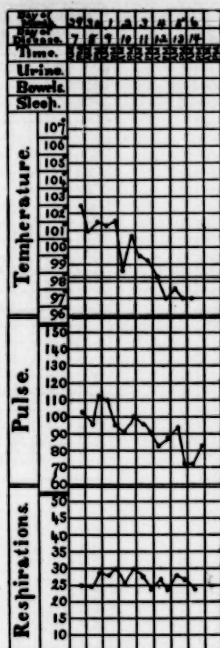
5/29. Temperature normal today. Eruption on body has almost entirely disappeared. Patient very hungry.

6/2. Up and about.

6/5. General condition excellent. Discharged well. Hospital diagnosis, typhus fever.

Laboratory Findings: 5/26—Blood pressure, 96. 5/26—Widal negative for typhoid and paratyphoid A and B. 5/29—Widal negative for typhoid and paratyphoid A and B. 5/29—Wassermann test negative. 5/29—White count, 9,000 and 10,600. 5/30. White count, 7,600.

Note on Diagnosis: In favor of typhus fever in this case is the abrupt onset and rapid fall of temperature, the marked prostration, and the fact that the eruption did not disappear on pressure; also the slightly increased white count, the redness of the throat, the speedy return of strength and the absence of evidence for the typhoid group. The duration of the fever, nine days only, is consistent with a mild attack of typhus. The fact that some elements of the eruption were pustular is in no way characteristic of typhus or of any other probable diagnosis. It seems likely, therefore, that the eruption was complicated by acne. The relation of pulse and temperature and the temperature curve is very suggestive of typhus fever. There can be little doubt that the hospital diagnosis, typhus fever, was correct.



CASE 5.

GROUP II.

Case 5. Man. Age, 28. Pedler. Born in Russia. Lives in East Boston. Admitted to hospital June 29, 1920.

Past History—Remembers none of exanthemata. Present Illness—One week ago, patient began to have pain in lumbar region, headache and slight cough. Felt feverish and indisposed, but continued to work until prevented by increasing severity of symptoms and vomiting. Yesterday the patient was sent in to the hospital with the diagnosis of grippé. His chief complaint was sore throat, slight cough and headache.

Physical Examination—Conscious and rational. Conjunctivæ slightly reddened. Pharynx and tonsils hyperemic. Heart and lungs negative. Abdomen shows no spasm or tenderness, but the liver and spleen are palpable. The face is flushed, and on the abdomen are a number of red spots resembling the rose-spots of typhoid. They disappear on pressure. 6/30—Face flushed. Eyes reddened. Spots seen in mouth “suspicious of Koplik’s, but not definite.” Rash resembles early measles, but is diffuse on trunk and arms. 7/2—Neck seems stiffer and more retracted. Rash is less marked. Some redness of throat. Spleen palpable. Spots on abdomen fairly well resembling rose-spots. There is possibly a slight Kernig’s sign. 7/3—Condition considerably improved. No stiffness of neck or

Kernig’s since lumbar puncture was performed yesterday. At this time 35 c.c. of clear fluid under increased pressure was withdrawn. The cell count was 50 per c.c. Rash on body practically all gone. A few macular lesions resembling rose-spots persist on the trunk. 7/20—Patient up and about the ward for over a week. It has not been demonstrated that the patient had typhoid fever. Discharged. Diagnosis—Pyrexia of Unknown Origin.

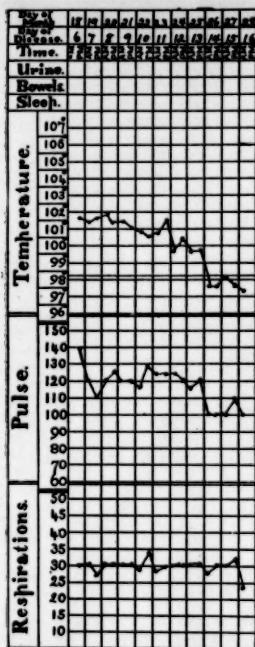
Laboratory Findings: 6/29—White count, 9,600. Blood pressure, 116/74. 6/30—Widal negative. Blood Wassermann negative. 7/2—Spinal fluid Wassermann negative. 7/5—Spinal fluid showed no growth. 7/5—Blood culture negative. 7/3—White count, 13,000.

Note on Diagnosis: In this case the duration of the fever—11 days—is consistent with mild typhus. The pulse rate and respiratory rate followed the temperature, as in typhus. Defervescence was complete in four days, and the onset was abrupt as compared with typhoid. The stiffness of the neck and suggestion of Kernig’s sign are both common in typhus as are the flushing of the face and the redness of the conjunctivæ. The slightly increased white count, the increase of pressure of the cerebro-spinal fluid and the increased cell count in the same, are to be expected in typhus. Many of these symptoms are not to be expected in typhoid fever, and the negative Widal test and blood culture are against it. The record shows that measles was considered in the beginning, but that this diagnosis was discarded. Although the rash apparently was not petechial in character, it is not always so in mild cases of typhus. All the findings are consistent with a diagnosis of typhus.

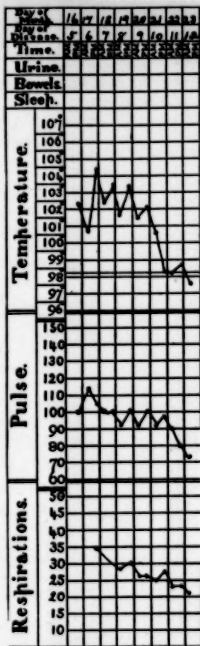
Case 6. Woman. Age, 21. Works in department store. Born in France. Lives in Boston. Admitted to hospital February 18, 1921.

Past History—Measles at age of 3. No other diseases except occasional slight sore throat. Present Illness—Has been feeling tired for some time, but worked until 2/13. On that day, got feet wet and neglected to change shoes. Soon began to have headache and shivering. Went home and to bed, where she had a chill lasting about two hours. The following day tried to go to work, but headache so severe she gave it up. Since 2/15 has remained constantly in bed, having headache, frequent chills, and a temperature of 101.3, with sweating at night.

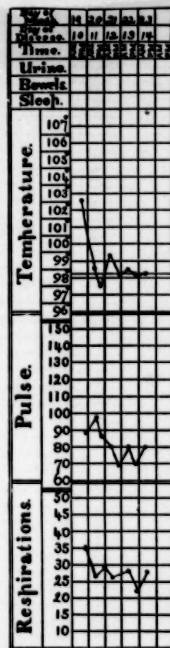
Physical Examination—Negative, except for eruption described as follows: Over trunk and extremities is a pink rash composed of minute discrete macules, the color of which disappears on pressure. 2/23—Two days ago the patient had a fine erythematous rash extending over the whole body and extremities. This rash was not present on admission. A consultant thought that the rash might be due to aspirin. 2/27—Temperature suddenly came down to normal and patient feels fine today. The rash has entirely disappeared. 3/7—Patient developed a high temperature yesterday, and had marked injection of the throat with a few patches of exudate on the tonsils and in the crypts. White count increased. The diagnosis was follicular tonsillitis. Twenty grains of aspirin was recently given every hour for three doses, but no rash resulted. 3/11—Throat clear. Temperature normal for 48 hours. 3/17—Discharged relieved. Diagnosis—Fever. Cause unknown. Follicular tonsillitis.



CASE 6.



CASE 7.



CASE 8.

Laboratory Findings: 2/19—Blood pressure 130/75. 2/20—White count, 7,800. Polymorphonuclears, 79%. 2/22—Wassermann negative. 2/22—White count, 7,600. Red count, 4,480,000. 2/25—Widal negative. 3/6—White count, 15,600.

Note on Diagnosis: In discussing the diagnosis of this case, it seems clear that the second attack of fever had no definite relation to the illness for which the patient entered the hospital, and that it is to be regarded as caused by an attack of tonsillitis occurring in convalescence. All the symptoms and signs of the original illness are consistent with a diagnosis of typhus fever. The record seems to indicate that the patient was not known to have taken aspirin before the appearance of the rash. Moreover, the aspirin given during the attack of tonsillitis produced no rash whatever. It seems unlikely, therefore, that the eruption was due to this drug. The duration of the fever,—13 days—coincides with the ordinary course of typhus, which seems the most probable diagnosis; but recorded facts do not exclude paratyphoid fever, and the eruption of typhus is usually composed of larger macules than those in this case.

Case 7. Man. Age, 18. Drug clerk. Born in Russia. Lives in Boston. Admitted to hospital September 6, 1912.

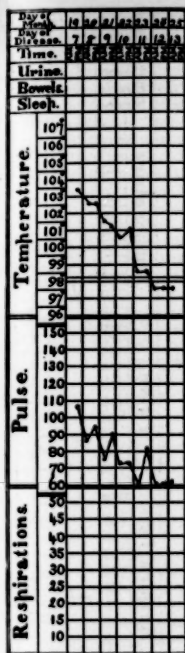
Past History—Never sick before. Present Illness—Five days ago got dizzy while at work. Felt nauseated and had severe headache, on account of

which he was sent home by his employer, and went to bed. For the past three days has been having slight chills followed by sweating. Now complains of severe frontal headache and pain in the back. Slight dry cough for a few days.

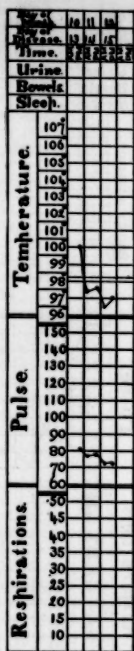
Physical Examination—Conjunctivae not injected. Throat slightly reddened. Abdomen moderately distended. No local tenderness, but some resistance in the region of the spleen, the edge of which was not definitely felt. Scattered over chest, arms, legs and back is a pinkish macular eruption. The skin between the lesions is normal and there are no lesions on the face or neck. 9/20—Erythema fading. Considerable prostration. 9/28—Unable as yet to find out what drug caused the erythema. 10/7—Discharged well. Diagnosis—(?) Typhoid fever. Dermatitis medicamentosa.

Laboratory Findings: 9/17—Blood pressure, 106. White count, 6,200. 9/18—Widal negative. 9/20—Widal negative. 9/24—Widal negative.

Note on Diagnosis: The abrupt onset, the curves of temperature, pulse and respiration, and the duration of the fever are consistent with mild typhus. The chills, headache and redness of the throat are consistent with this diagnosis as is the distribution of rash. The absence of petechiae is not an important objection, because in mild typhus petechiae are not always present. There is nothing in the case particularly suggestive of typhoid fever. Evidence in regard to paratyphoid is not recorded. Typhus fever seems the most probable diagnosis.



CASE 9.



CASE 10.

Case 8. Man. Age, 37. Storekeeper. Born in Russia. Lives in Roxbury. Admitted to hospital May 19, 1912.

Past History—Measles and pertussis. Present illness—Ten days ago had several chills and severe headache, but no pain elsewhere, and no vomiting. Fever ever since. Diarrhea for past three days.

Physical Examination—Slight prostration. Tongue dry and shows a heavy, white coat. Throat dry and slightly red, with mucus adherent to the posterior pharyngeal wall. Spleen easily palpable. On the trunk and extremities are many pin-head acuminate papules like rose-spots. 5/20—Spleen palpable. Abundant macular eruption. 5/24—Spleen palpable. Rose-spots persist. (Temperature reached normal four days ago.) 5/31—Patient discharged well. **Diagnosis—**Typhoid fever.

Laboratory Findings: 5/20—White count, 19,400. 5/21—Widal positive.

Note on Diagnosis: The temperature in this case reached normal on the eleventh day by crisis. The onset was abrupt. These features are very suggestive of typhus fever. The probability of typhus is further increased by the abundance of the eruption and by the fact that the eruption was still visible four days after the temperature became normal. There is no feature of the case inconsistent with typhus fever. Observations made in recent years show that a positive Widal test in the ordinary dilutions is common in typhus. The

abrupt onset, the short duration of the fever, its termination by crisis and the white count of 19,400, as well as the persistence of the eruption, are features not to be expected in typhoid fever. The diagnosis of typhus fever seems most probable.

Case 9. Man. Age, 40. Runs a bottle machine. Born in Russia. Lives in Boston. Admitted to hospital March 19, 1913.

Past History—Measles in childhood. Present illness—Well until one week ago, when he began to feel chilly. Feverishness has persisted without other symptoms, except that four days ago the patient noted a rash on the arms, chest and abdomen. Complains only of feverishness and constipation.

Physical Examination—Throat shows slight general redness. The skin shows many dark red macules of small size scattered over chest, abdomen, arms and back. 3/20—Very large number of reddish-brown spots on abdomen and chest. "Mostly disappear on pressure." The eruption is very abundant on the back. 3/22—Spots still abundant; some disappear on pressure. 3/23—Dulness throughout left lower lobe without modification of breathing. Occasional rale after cough. (Lungs were negative on March 20th.) General condition much improved. 3/27—Left base resonant. Very rare rale after cough. 4/1—Gaining strength rapidly. Discharged well. **Diagnosis—**Pneumonia.

Laboratory Findings: 3/20—Blood pressure, 96. White count, 10,300. 3/23—White count, 8,400. 3/24—Widal negative. 3/25—Widal negative.

Note on Diagnosis: The duration of the fever (11 days), the rapid lysis, the profuse eruption, some elements of which did not disappear on pressure, the persistently negative Widal tests, and the increased white count, suggest the diagnosis of typhus fever. The observation of slight dulness at the left base on March 23d—the last day of the fever—may have been caused by atelectasis, and this hypothesis seems to me more probable than that of pneumonia. The diagnosis of typhus fever would have been justified.

GROUP III.

Case 10. Man. Age, 30. Tailor. Born in Russia. Lives in Boston. Admitted to hospital September 10, 1912.

Past History—Unimportant. Present illness—Thirteen days ago began to have headache and pain all over the body, but kept at work until the third day. On the fourth day, he remained in bed because too weak to get up. A physician who saw him on the fifth day made the diagnosis of gripe. The headache at this time was very severe. Worse in the morning. The patient felt hot and feverish, especially in the afternoon, and had profuse sweating at night, and pain all over body. Later, the physician told the patient that he probably had typhoid fever. Weakness, pain, sweating, anorexia, constipation and headache continued, the latter especially severe for the past three days. Yesterday the patient had a nosebleed of about two tablespoonfuls. Has had a cough in the daytime for three or four days, and raises a little whitish sputum.

Physical Examination—The skin is hot and covered with profuse perspiration. Tongue is coated. Throat negative. Lungs resonant, except at right

top, where resonance is somewhat impaired. At this point, fine crepitant râles are heard, and the vocal resonance and tactile fremitus are increased. Abdomen slightly sensitive in the region of the spleen. Spleen not felt. (†) Rose-spots on chest and abdomen. Kernig's sign present, but no rigidity of neck. 9/14—Physical examination negative. No laboratory evidence of typhoid. 9/17—Up and about the ward for the past three days without ill effect. General condition excellent. Discharged well. Diagnosis—Febricula.

Laboratory Findings: 9/11—White count, 11,000. Blood pressure, 90. 9/11—Widal negative. 9/15—White count, 16,200.

Note on Diagnosis: In this case, although the onset was somewhat less abrupt than is often the case, the febrile period of thirteen days and the rapid lysis suggest typhus. The severe headache, the increased white count, the rapid convalescence, the Kernig's sign, and the negative Widal, are in accord with this diagnosis. The rash was more consistent with a diagnosis of typhoid, but not incompatible with mild typhus. The record does not show whether agglutination tests for paratyphoid were performed, and the evidence for the exclusion of the typhoid group is incomplete. No satisfactory diagnosis can be arrived at from the evidence in hand; but typhus fever is strongly suggested, with paratyphoid as a possible alternative diagnosis.

Case 11. Man. Age, 32. Butcher. Born in Newfoundland. Lives in Boston. Admitted to hospital July 16, 1912.

Past History—Unimportant. Present Illness—Eight days ago, while at work, became weak and dizzy, and had headache, but continued to work until two days ago when he fell down as a result of weakness. A physician who was called at that time told him to go to bed, and found his temperature to be 106. He thinks he has had fever from the beginning, and that he was delirious six days ago. He felt better in the mornings, and feverish in the afternoons. Has been very constipated in spite of the use of cathartics. Has felt nauseated, and has had pain in the limbs.

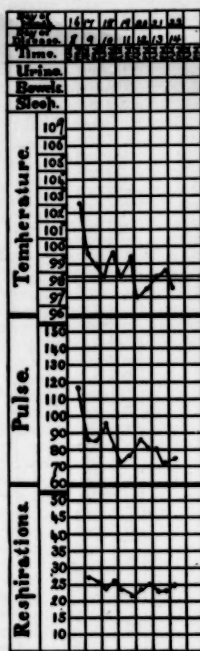
Physical Examination—Tongue moist; slight white coat; red about edges. Throat not remarkable. Rose-spots on abdomen. Examination otherwise negative. 7/20—Widal repeatedly negative. No rose-spots. Patient says he feels much better. 7/24—Patient up and about daily, and feeling perfectly well. 7/25—Discharged well. Diagnosis—Febricula.

Laboratory Findings: 7/17—Widal negative. 7/18—Widal negative. White count, 14,000.

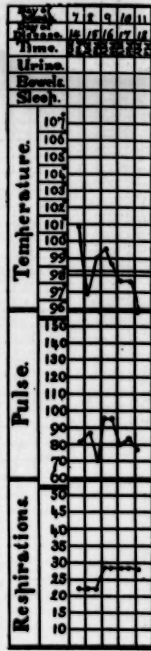
Note on Diagnosis: The course of the fever, its duration, the severe headache, prostration, delirium, the increased white count and the negative Widal are consistent with a diagnosis of typhus fever. The rash, however, was slight. As in Case 10, the data seem insufficient for diagnosis, but typhus fever is strongly suggested, and paratyphoid seems possible, unless agglutination tests for paratyphoid were tried but not recorded.

Case 12. Woman. Age, 27. Housewife. Born in Massachusetts. Lives in Boston. Admitted to hospital April 7, 1912.

Past History—Patient says that she had typhoid



CASE 11.



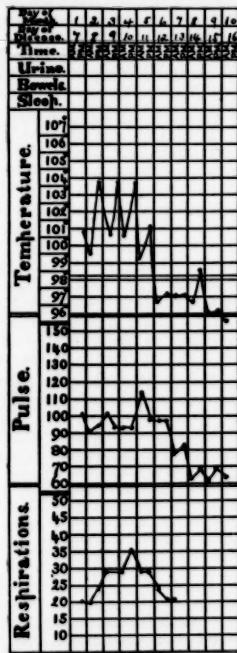
CASE 12.

fever some years ago. Present Illness—Two weeks ago began to have severe frontal headache, pain in back of the neck, and vomiting. The vomitus was greenish in color and was not observed to contain blood. Since then, has had considerable fever and general malaise. Four days ago, neck became more painful and rigid, preventing the patient from moving her head. No nosebleed, sore throat or sweats. Has slept very poorly.

Physical Examination—Neck moderately stiff. Tenderness over cervical vertebrae. Breath sounds at left apex are harsh, and there are a few medium râles, but no dullness or change in vocal resonance or tactile fremitus. On the abdomen and chest, and to a less extent on the extremities, are many papules and macules, varying in size from that of a pin-point to that of a "BB" shot. They disappear on pressure. 4/11—The stiffness in neck noted on admission has now entirely disappeared. 4/15—Eruption which resembled rose-spots has entirely disappeared. Patient eats and sleeps well. No evidence of typhoid. 4/17—Discharged well. Diagnosis—Acute infection.

Laboratory Findings: 4/8—White count, 14,800. 4/8—Widal positive. 1:10 marked clumping. No motility. 1:50 same. Few non-motile bacilli not clumped. 4/10—Widal positive. 1:50 marked clumping. No motility. 1:100 clumping. No motility. Many non-motile bacilli not clumped. 4/11—White count, 7,000.

Note on Diagnosis: The abrupt onset, the fever of 16 days' duration, terminating by rapid lysis, the severe headache, the extensive rash consisting of macules and papules, the increased white count, are strongly suggestive of typhus fever. The patient's statement that she had had typhoid a few years previously was evidently considered sufficient evidence to exclude typhoid as a diagnosis in this case. The positive Widal may have been due to the previous attack of typhoid, or may have been a concomitant effect of typhus fever. The fact that the elements of the rash varied in size and that both macules and papules were present, is more in harmony with typhus than with any disease of the typhoid group. Typhus seems the most probable diagnosis in this case.



CASE 13.

Case 13. Man. Age, 18. Dishwasher. Born in Greece. Lives in Boston. Admitted to hospital November 1, 1912.

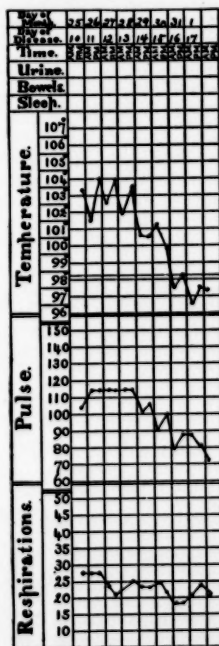
Past History—Measles in childhood. Interrupted fever, with chills and headache, called "spleen disease," three years ago. Probably malaria. Present Illness—Fever for past week, with headache and nosebleed. Has stayed in bed for two days and has vomited two or three times. This he attributes to medicine which he had taken.

Physical Examination—Apathetic. Throat shows no redness. Abdominal reflexes present. On the skin are many pink spots the size and shape of

rose-spots, but not obliterated by pressure. 11/5—Headache very severe. No spots remaining. Widal test suggestive on day of admission, positive today. 11/9—Temperature normal for four days. Bowels regular, appetite good, and sleeps well. 11/27—Has been up and about for over a week. Discharged well. Diagnosis—Typhoid fever.

Laboratory Findings: 11/1—Widal very suggestive. White count, 7,000. Blood pressure 125. 11/2—White count, 11,000. 11/3—White count, 11,000. 11/4—Widal positive. 11/5—Smear for malaria negative. 11/19—White count, 10,000.

Note on Diagnosis: The probable duration of the fever (eleven days), the rapid lysis, the pulse-rate proportional to temperature, the severe headache, the fact that the spots did not disappear on pressure, and the slightly increased white count, suggest the diagnosis of typhus fever. The positive Widal reaction is no obstacle to this diagnosis. Although the possibility of other diseases must be considered, typhus seems to me the most probable diagnosis on the evidence at hand.



CASE 14.

Case 14. Man. Age, 27. Painter. Born in Russia. Lives in Boston. Admitted to hospital January 25, 1915.

Past History—Unimportant. Present Illness—Ten days ago felt drowsy and remained in bed for the four days following. Then, feeling better, the patient got up and worked for two days, after which he was obliged again to remain in bed.

Complaints of weakness and indefinite pain in the epigastrium.

Physical Examination—Prostrated. Conjunctivae normal in appearance. Tongue shows a thick, moist, yellow coat. Throat negative. Spleen distinctly palpable. Skin shows several rose-spots on front of trunk. Bronchial breathing at right apex. 1/26—Tongue coated and dry. Spleen palpable. (?) Rose-spots over chest and abdomen. 1/30—Patient much more comfortable. General condition good. 2/16—Patient in good condition. In view of the three negative Widal reactions, visiting physician made the diagnosis of pneumonia from the chart. Patient discharged well. **Diagnosis**—Pneumonia.

Laboratory Findings: 1/25—Widal negative. Blood pressure 90/50. White count, 5,600. 1/28—Wassermann negative. 2/3—Widal negative. 2/10—Widal negative.

Note on Diagnosis: In this case the fever of fifteen days duration, the rapid lysis, marked increase of pulse and respiratory rates and repeated negative Widal reactions, are suggestive of typhus fever. The bronchial breathing at the right apex, mentioned at the time of admission, was not subsequently referred to in the notes. Neither is there any record of râles having been heard. It seems probable that this observation is to be regarded as indicating nothing more than the normal modification of respiration in this region. There was no cough, pain in chest or other evidence of pneumonia, so that the clinical diagnosis of pneumonia is without much support. Although the eruption was scanty and the white count low, I incline toward the diagnosis of typhus fever in this case.

The New England Surgical Society.

THE SURGICAL MANAGEMENT OF TOXIC GOITERS.

By JOHN DE J. PEMBERTON, M.D., ROCHESTER, MINN.
[Section of Surgery, Mayo Clinic.]

THE term "toxic goiter" includes exophthalmic goiter and hyperfunctioning adenomatous goiter. During the past decade the immediate and end-results of the surgical treatment of toxic goiters have improved greatly. The improvements can be attributed directly to advances in our knowledge and surgical management of the diseases, due chiefly to the work of C. H. Mayo, Crile, Plummer, Kendall, and others, and indirectly to the fact that the knowledge of the decreased surgical mortality and better end-results has led patients to seek surgical treatment before the disease has produced irremediable visceral changes.

The statistics on exophthalmic goiter quoted in this paper are based on 1224 operations performed on 677 patients from July 1, 1920, to July 1, 1921. The statistics on hyperfunctioning adenomatous goiter are based on 281 operations on 281 patients during the same period.

The diagnosis of exophthalmic goiter was made from the clinical history and findings, and from the determination of the basal metabolic rate, and was corroborated in every instance in which gland tissue was removed by the pathologist's diagnosis of diffuse parenchymatous hypertrophy of the thyroid gland.

TWO FORMS OF EXOPHTHALMIC GOITER.

Exophthalmic goiter may occur in two forms, the remittent and the chronic. In the remittent form, the onset is usually gradual, and the patient may not be aware of its presence until the occurrence of a mild exacerbation induced by shock, fright, sickness, overwork, and so forth. The symptoms gradually increase in severity, with or without the appearance of a goiter or exophthalmos, until a crisis occurs in which all the symptoms suddenly increase in severity and usually are accompanied by nausea, vomiting, diarrhea, and extreme debility. If the patient survives the crisis, a period of partial remission of the symptoms follows which may persist for months, but usually is superseded again and again by waves of varying intensity. The remission may be complete and the patient symptomatically cured, the disease being quiescent, or the remission may be partial, in which case the patient becomes a semi-invalid. In the chronic form the disease slowly progresses from a gradual onset and runs an even, usually mild, course, uninterrupted by waves of exacerbation. The disease may begin as the remittent form and continue as the chronic. The longer the progress of the disease is allowed to remain unchecked, the more marked will be the visceral degenerations (heart, liver, kidney, and muscles).

THE SELECTION OF PATIENTS FOR OPERATION.

Surgery is now the treatment of choice in the greater number of these cases. However, surgery is not indicated in all stages of the disease, and in the choice of the time to operate and the selection of the type of operation for the individual patient lies the real crux of the problem. Unfortunately, there is no rule of thumb to govern the indications for operation that is applicable to all patients.

The high operative risk attendant on surgery of the thyroid in exophthalmic goiter is not due to the accidental causes incident to a major surgical procedure, such as hemorrhage, infection, and embolism, but to the acute intensity of hyperthyroidism induced by the operation, and to the frequency of pulmonary complications due to the patient's lowered resistance. Naturally, then, our efforts should be directed toward preventing and controlling the post-operative reaction and toward building up the patient's resistance. While much may be accomplished by reducing the intensity of the reaction and by applying supportive measures, unhappily, our means of actually checking its

progress are very limited, and usually the post-operative wave runs its natural course of about three or four days, and is then checked by the patient's resistance. Our means of preventing the reaction lie in the technic of the surgical management and in the preliminary treatment of the graver forms of the disease.

During the past five years the routine estimation of the basal metabolic rate in all patients with toxic goiter has been of inestimable value to the clinician and surgeon in planning the management of these patients. The basal metabolic rate gives an "accurate mathematical index of the degree of functional activity of the thyroid gland." Aside from its value as an aid in the differential diagnosis of goiters associated with neurosis, it is apparent that repeated estimations in a patient will indicate, in mathematical terms, the accurate progress or regression of the disease. Generally speaking, the basal metabolic rate is a relative index of the operability; that is, if the criterion of operability were based solely on the basal metabolic rate in a large group of cases a higher mortality might be expected in a group with rates above +50 per cent. than in a similar group with rates below +50 per cent. The individual case cannot be judged by this alone. The basal metabolic rate represents the minimum heat production of the body and is essentially a measurement of the catabolic processes; it does not express the degree of anabolism. It is readily conceivable that the rates of anabolism and catabolism may be increased equally or unequally, so that either anabolism or catabolism may predominate. In the patient in whom anabolism predominates, the increased heat production is maintained at the expense of the food intake and the body cells suffer only from their increased activity; in the catabolic type the increased heat production is maintained, to a large extent, by the stored body pabulum, the cells thus suffering in consequence. Clinically, the pictures of the two states differ widely. The one patient is mentally alert, excitable, well-nourished, flushed, warm-skinned, of a normal or slightly decreased weight, with a good or ravenous appetite. The other is alert but apprehensive, pale or cachectic, showing marked loss in weight and strength, with a poor or normal appetite. These types vary in degree in different patients, and in the same patient one state may supersede the other. It is apparent that the operative risk is considerably greater in the patient with the catabolic type, the patient who has lost weight, even though the basal metabolic rate is less than in the other. Not infrequently patients return to the Clinic after double ligation, and an extended period of rest at home, greatly improved in every respect, with the surgical risk obviously diminished, but with a higher basal metabolic rate than on the previous visit. It is therefore evident that the basal metabolic rate as an index to the operability of a patient with exophthalmic goiter is valuable

only when considered with the clinical history and findings.

The high operative risk clearly contraindicates operation for exophthalmic goiter in three phases of the disease; that is, during an impending crisis (evidenced by a steady rise in the basal metabolic rate and loss of weight), during a crisis, and immediately after a crisis. Added risk is obviously encountered in patients with low-grade infections, such as tonsillitis, otitis media, pleurisy, and the like; in patients with marked lowered resistance, as evidenced by marked loss of weight and strength; in patients with dilated hearts, and in patients with visceral degeneration. About 1 per cent. of all patients with exophthalmic goiter show some trace of glycosuria, but unless they have true diabetes, the operative risk is not materially increased.

CLASSIFICATION OF PATIENTS ACCORDING TO TREATMENT.

Surgically, all patients with exophthalmic goiter fall into one of three groups: (1) patients on whom a primary thyroidectomy can be performed with reasonable safety, (2) patients, concerning whom the wisdom of advising thyroidectomy is doubtful, and (3) patients in whom indications for extended observation or preliminary measures are clearly defined.

Group 1. Primary thyroidectomy, unless contraindicated by some of the factors enumerated, is indicated in patients with mild or moderate hyperthyroidism, whose basal metabolic rate is probably not more than +55 per cent., provided they are carrying the increased load well, as evidenced by their ability to perform their ordinary work requiring moderate exertion. It is important that the severity of the disease is not increasing. The degree of loss of strength and weight and the height of the basal metabolic rate, taken separately, are only relative criteria of the operability of patients with exophthalmic goiter; but taken together, and in relation to the phase of the disease, they become the basis on which an opinion is formed. Thus, in this group, the greatest loss of strength was graded 4 on the basis of 1, 2, 3, 4; the greatest loss of weight was 55 pounds, and the highest basal metabolic rate was +90 per cent. The averages, however, for the group were: loss of strength, 1.4; loss of weight, 14 pounds, and basal metabolic rate, +36 per cent.

Group 2. In this group are patients whose basal metabolic rates are but slightly higher than those of the preceding group, but about whom doubt exists as to the advisability of recommending thyroidectomy, possibly because of recent loss of weight, marked or moderate weakness of the quadriceps, the presence of slight edema, or undue apprehension on the part of the patient. In this group, ligation of the superior thyroid vessels is advised as a test. If no reaction follows, or if one of only mild severity, as evidenced by temporary increased tachy-

cardia, nervousness, and slight vomiting, the gland may be resected in from seven to ten days. However, if following ligation, moderate or severe reaction develops, including marked restlessness, extreme tachycardia, vomiting, and possibly fever, a second ligation is indicated, and the patient is classified in Group 3. In Group 2, the greatest loss of strength was graded 4, the greatest loss of weight was 67 pounds, and the highest basal metabolic rate was +89 per cent. The averages, however, for the entire group were: loss of strength, 1.65; loss of weight, 19 pounds; and basal metabolic rate, +51 per cent.

Group 3. A certain number of patients, with exophthalmic goiter, who come to the surgeon, are obviously in need of rest, close observation in a hospital, and, possibly, preliminary medical and surgical treatment before major surgery can be attempted. The principal indications may be enumerated: (1) patients, irrespective of their general appearance, who are carrying a high degree of hyperthyroidism, as evidenced by a high metabolic rate, of +70 per cent. or higher; (2) patients in actual crises, or patients whose histories indicate progression of the disease; (3) patients who are extremely apprehensive; (4) patients who show marked weakness, indicated particularly by their inability to walk any distance, or to climb steps; (5) patients with marked recent loss of weight; (6) patients with cardiac dilatation; (7) patients with evidence of chronic visceral changes, and (8) patients with chronic infection. By rest and close observation in these cases the phase of the disease may be determined, or the patient may be tided over an actual crisis, an overworked myocardium restored, or an infection may be eliminated, and a certain number of these patients may then be classified in Groups 1 or 2. The greater number, however, owing to excessive hyperthyroidism, or to lowered resistance, as evidenced by marked loss of weight, strength, and endurance, must be restored to their balance by preliminary measures before resection of the thyroid gland can be attempted with safety. In some of the patients, the effect of simple surgical procedures cannot be anticipated with any degree of accuracy. Accordingly it remains for the surgeon to feel his way, beginning with the simplest procedure, such as injection into the thyroid gland of quinin-urea or of boiling water, in order to test the patient's resistance to an acute exacerbation of hyperthyroidism. If reaction follows, the procedure is tried again, after the complete subsidence of the reaction. If, however, no reaction follows, ligation of the superior thyroid vessels can usually be undertaken safely. In most instances, the exclusion of a possible dangerous reaction following ligation may be anticipated and the procedure undertaken with but slight risk.

It is a frequent observation that following any exacerbation of hyperthyroidism, whether

due to the natural course of the disease or induced by operation, a diminution of the hyperthyroidism occurs in from five to ten days, as recorded by the basal metabolic rate, below the preexacerbation level. This is accounted for by the patient's increased tolerance or immunity, and with few exceptions the reaction to the second ligation is of diminished severity. However, if a very marked reaction follows the first ligation, especially if accompanied by great prostration and fever, the second ligation, unless postponed for several weeks, until the patient has regained her strength, may prove fatal.

After the ligation of both superior thyroid vessels and a period of rest (3 months), the patients, with but few exceptions, show a really remarkable improvement. There is great gain in strength, endurance, and weight (often equalling the amount lost after the onset of the disease). In this series the average weight gained was 20 pounds, and the average reduction in the basal metabolic rate was 27 per cent. In many instances the recovery is so nearly complete that the patient feels that further surgery is unnecessary, but operation for the resection of the thyroid gland should be insisted on, or a "recurrence" will most likely follow.

A small percentage of patients who return after ligations will not be sufficiently improved to warrant undertaking a thyroidectomy with reasonable risk. The failure to gain may be accounted for, in most instances, by (1) continued overexertion or mental stress, (2) an intercurrent infection, (3) visceral degenerative changes, or (4) the failure actually to have ligated the superior thyroid artery. The difficulties encountered in correctly handling this small group of patients present a most perplexing problem to the surgeon. After further rest, some patients show improvement spontaneously; others improve after "religations" of the superior or inferior thyroid arteries. X-ray treatment has been tried with indifferent success. Many of these patients are semi-invalids and show decided visceral degenerative changes, the effect of the long-continued hyperthyroidism. The limits of remedial measures beyond partial ablation of the thyroid gland are obviously restricted, and in consequence the patients cannot be made good risks; they constitute, therefore, the largest proportion of the mortality group, and if the surgeon is working with an eye on the mortality record, he is justified in refusing to operate. On the other hand, the operation, in many instances, is justifiable and indicated, for after the progress of the disease has been checked by a partial thyroidectomy, many of these patients live happy and useful lives for many years. In this group (Group 3) the greatest loss of strength was graded 4, the greatest loss of weight was 77 pounds, and the highest basal metabolic rate was +129 per cent. The averages for the group were: loss of strength, 2.22; loss of weight, 22 pounds; and basal metabolic rate, +63 per cent.

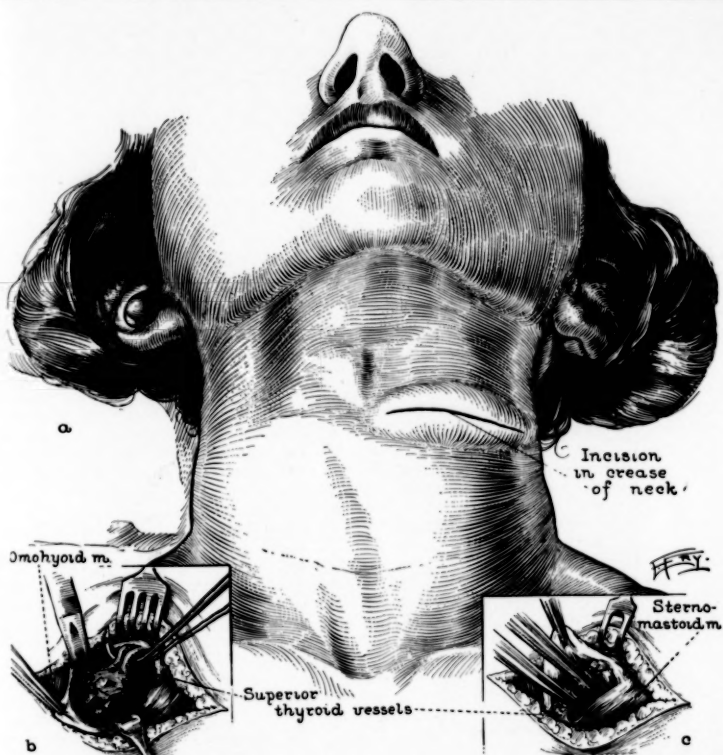


FIG. 1.—a The incision is outlined by the needle in the crease of the neck before the superficial structures are injected. b Fascia between the omohyoid and sternohyoid muscles divided and the ligature passed beneath the superior thyroid vessels. c The superior thyroid artery and vein divided and ligated.

OPERATIVE PROCEDURES.

As I have indicated, much may be accomplished by the preoperative preparation of patients who are poor risks. Often, rest in bed for a week or ten days will bring about decided improvement and materially change the operative risk. It must be emphasized, however, that if rest in bed is prolonged over several weeks, the patient's strength is lessened, and one may often be deceived with regard to the operability, by the appearance of the patient in bed. It is most desirable, therefore, to have the patient up and around for a week or more before the final decision is made. Digitalis is indicated in patients with decompensated and fibrillating hearts.

Two important considerations, often overlooked in the medical management of patients with exophthalmic goiter, are the necessity for the increase in the fluid and food intake. Increased consumption of fluids aids materially in

the elimination of the by-products of metabolism and of heat through evaporation. Boothby and Sandiford have shown by recent experiments that a patient with moderate hyperthyroidism, at rest in bed, requires higher caloric intake than a person doing moderate muscular work, so that the necessity of maintaining an easily assimilable diet becomes apparent.

Anesthesia. Local anesthesia, or local combined with as little general anesthesia (gas oxygen or ether) as is possible to satisfy the patient, is safest for patients with exophthalmic goiter. Although these patients are nervous, by reason of their disease, their confidence is easily acquired, and with but few exceptions, they are eager for operation. It is decidedly advantageous to have the opportunity of observing patients who are poor or doubtful risks, awake on the operating table, and if occasionally a patient loses entire self-control or becomes extremely apprehensive, a procedure milder than

the one originally planned is indicated. Long, general anesthesia of any kind tends, temporarily at least, to lessen the patient's resistance, and its effect, therefore, is only another obstacle to be overcome by an already overburdened organism.

OPERATIVE TECHNIC.

Ligation. The operative technic of ligation of the superior thyroid vessels and resection of the thyroid gland, is well standardized. I shall emphasize only a few points of special importance (Fig. 1). A transverse incision about 4 cm. long, in the line of the natural crease in the neck, at the level of the thyroid cartilage, gives ample exposure and leaves an insignificant scar. By

Thyroidectomy. The importance of the care, skill, and thoroughness of the operative technic cannot be overemphasized. Not infrequently these considerations are the deciding factors in the immediate and ultimate recovery of the patient. Hemorrhage, infection, the labored or obstructed breathing incident to the injury of the recurrent laryngeal nerve, or the exhaustive effect produced by prolonged operation will be just so much dead weight and may be sufficient to tilt the scale.

With the employment of local anesthesia it is especially essential that a wide exposure of the gland be made in order to prevent all unnecessary traction, and with this end in view, the pre-thyroid muscles are freely divided (Fig. 2).

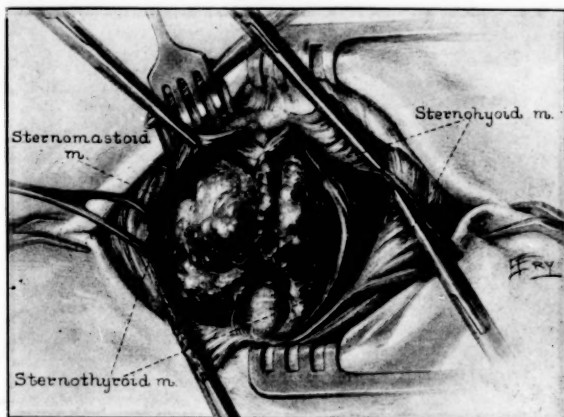


FIG. 2.—Exposure of the thyroid gland by an incision through the platysma and division of the sternohyoid muscles.

dividing the cervical fascia longitudinally just mesial to the inner border of the sternomastoid muscle, the anterior belly of the omohyoid muscle comes into view. By retracting this mesially, and the sternomastoid laterally, the superior pole of the gland and the superior thyroid artery are seen. A ligature passed around the pole of the gland will, in some instances, fail to include the artery, and the artery should, therefore, be exposed and ligated separately. Often, owing to the plexus of veins around the artery and the difficulty of avoiding puncture of these with an aneurysm needle, it may be simpler to divide the vessels between clamps and ligate the ends. At times an artery is encountered of such huge dimension that the surgeon may be in doubt for a moment whether he is dealing with the thyroid artery or the carotid. As the flow of blood in the two vessels is in different directions, the identity of the artery may be established by temporarily clamping the artery and noting on which side of the clamp the pulsations are checked.

Formerly the operation consisted in the extirpation of a lobe and the isthmus, with the resection of a small portion of the remaining lobe. On account of the rather high percentage of recurrences, this led to a modification consisting in the resection of both lobes with removal of the isthmus, and the preservation of gland tissue posteriorly and adjacent to the side of the trachea, amounting to from one-sixth to one-third of a normal-sized lobe on each side (Fig. 3). The age of the patient is the most important consideration in gauging the amount of gland to be saved; the largest amount is preserved in young persons. While the minimum amount of thyroid gland necessary to carry on its normal function is not accurately known, it must vary with the individual and with the character of the gland tissue. I believe that the preservation of functioning gland tissue amounting to one-third of a normal lobe will prevent the occurrence of hypothyroidism. The advantage of leaving the posterior portion of the gland on either side is that it will serve as a buffer be-

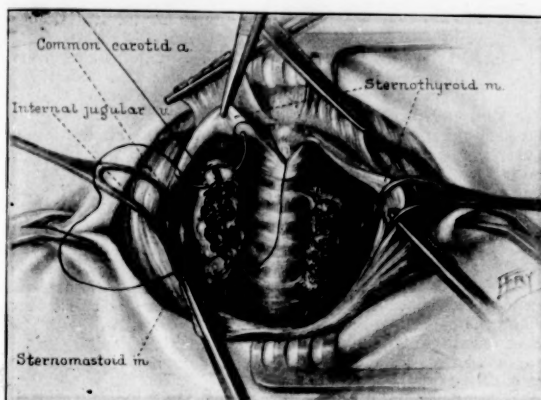


FIG. 3.—Double resection of both lobes with preservation of the posterior portion of the lobes.

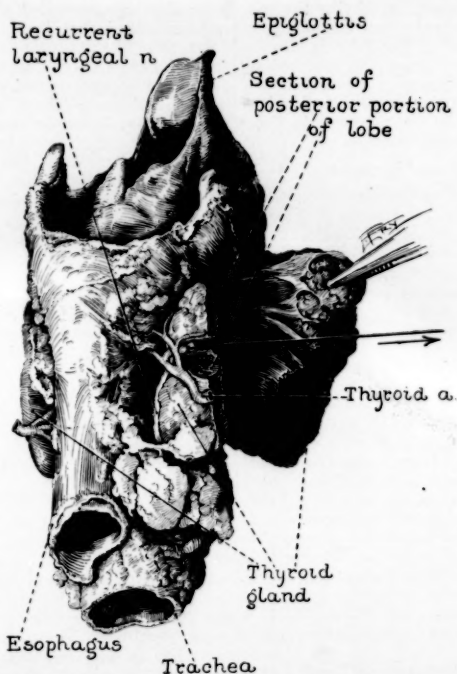


FIG. 4.—The thyroid gland sectioned and the posterior portion divided to expose the close relation of the recurrent laryngeal nerve and the branches of the thyroid artery. Traction on the vessel branch pulls the nerve forward.

tween the field of operation and the parathyroid bodies and the recurrent laryngeal nerve which lie behind.

After the resection of one lobe it is essential that the forceps be tied off before the other lobe is resected; otherwise the forceps may be pulled off accidentally, followed by bleeding, with staining of the operating field and retraction of the vessel. In checking such bleeding, injury to important structures may occur, especially if there is a retraction of the main internal branch of the inferior thyroid artery which runs up between the trachea and the inner margin of the lobe of the thyroid (Fig. 4). The cut end of this vessel will lie very close to the recurrent laryngeal nerve. If on account of the extreme friability and vascularity of the goiter, the resection of one lobe has consumed considerable time, it is often wise to conclude the operation, and if indicated, to resect the remaining lobe at a later date. However, in this series, a double resection was performed in all except six of the cases.

Crile's plan of packing the wound with gauze in patients who are obviously poor risks, has proved to be a valuable addition to the operative technic. The method used in the Mayo Clinic consists in packing the wound with two long strips, 2.5 cm., of sterile gauze. The wound is closed in the usual manner, permitting the ends of the gauze to protrude through the middle of the skin incision. A rubber tube is also inserted to drain off the serum not absorbed by the gauze. Better drainage is promoted, and certainly wound absorption is considerably lessened. The drains may be removed in from twenty-four to forty-eight hours.

POSTOPERATIVE MANAGEMENT.

In the postoperative management of patients with exophthalmic goiter, the paramount necessity of administering fluids, and more fluids, should always be borne in mind. Immediately after the operation saline or glucose (5 per cent. solution) should be given by rectum, or, if the patient is suspected to be a poor risk or is vomiting persistently, fluid should be given subcutaneously. The patient's ability to take fluid by mouth is an encouraging sign, and the prevention of gastro-intestinal upsets should always be considered in prescribing any accessory treatment. As I pointed out, food is important, but caution must be observed in pushing it too early, because of the danger of upsetting the gastro-intestinal tract. The elimination of body heat by ice bags and packs, as advocated by Crile, is valuable. Morphine should be used only to control restlessness; its too liberal use may be followed by nausea and vomiting. Digitalis is indicated in patients with fibrillating hearts, but it should not be continued at the expense of the gastro-intestinal tract. Inhalations of steam often prove very soothing in relieving excessive tracheal mucus.

In our experience, "recurrences" and a lack of that improvement normal to the majority of

patients are due to one of four factors: (1) too early resumption of muscular exertion (overwork) and mental stress, (2) infection (recurrent), (3) failure to remove a sufficient amount of thyroid gland, and (4) irreparable visceral changes. The first factor is preventable; the patient should always be advised not to resume strenuous work for a year or longer. Although the cause of the disease is not known, the frequent presence of foci and the fact that its onset often follows infections, such as influenza and tonsillitis, prove that infection must be an important factor. The elimination of all foci should be a routine precaution. In this series the onset of the disease followed influenza in 151 cases (22 per cent.). A history of tonsillitis and septic tonsils was noted in 367 patients (55 per cent.). Included in this series are fifty-six patients (8 per cent.) with recurrent symptoms of exophthalmic goiter, of whom thirty-nine were females and seventeen males.

HYPERFUNCTIONING ADENOMATOUS GOITER.

The history of a patient with hyperfunctioning adenomatous goiter differs widely from that of a patient with exophthalmic goiter. In the former the symptoms of hyperthyroidism do not occur on the average until about fourteen years after the appearance of the goiter, and their onset usually is insidious. Often the patient is unaware of the presence of the goiter and seeks medical advice only because of the visceral degenerative changes caused by the long-continued hyperthyroidism. There may be a relatively sudden onset, however, usually induced by an intercurrent infection or by the administration of iodine. The disease, as a rule, is mild, but progressive, and is seldom, if ever, interrupted by a spontaneous remission of symptoms. As pointed out by Plummer, the clinical picture may resemble either the syndrome of cardiovascular disease or that of true exophthalmic goiter.

Surgical Management. Except in the occasional patient who shows evidence of marked loss of weight and strength, associated with a high degree of hyperthyroidism, very little can be gained by preliminary surgical measures, such as ligations. In all of these patients, however, the preoperative medical measures and the strict operative requirements outlined for the patients with exophthalmic goiter are of equal importance.

MORTALITY.

From July 1, 1920, to July 1, 1921, 1,954 patients with goiter were operated on in the Clinic. One hundred and one had ligations only. Eighteen hundred and fifty-three patients had partial thyroidectomies, in 465 of whom the thyroidectomy was preceded by one or more ligations. Thirty-five patients died, a mortality of 1.78 per cent. Eight of the 996 patients with simple goiter, unassociated with hyperthyroidism, died, a mortality of 0.8 per

cent. Four of the 281 patients with hyperfunctioning adenomatous goiter died, a mortality of 1.4 per cent. Twenty-three of 677 patients with exophthalmic goiter, on whom 1,224 operations were performed (ligations and thyroidectomies), died, a mortality of 1.87 per cent., by operations, and 3.39 per cent. by patients. Fourteen of the patients (2.39 per cent.) were of the 585 who had thyroidectomy, and nine (1.4 per cent.) were of the 639 who had ligations. Five (22 per cent.) of the patients who died had recurrent goiter; they represent 8.9 per cent. of the fifty-six patients in whom the disease recurred. The deaths were due to three main causes: (1) accidental causes, three patients; (2) intense hyperthy-

roidism, seven patients; and (3) moderate hyperthyroidism plus pulmonary complications due to the patient's lowered resistance incident to the long-continued progress of the disease or to some intercurrent cause, such as hemorrhage or infection, twelve patients. In one patient the operation failed to check the progress of the disease. The deaths due to severe hyperthyroidism are preventable to a large extent; either an error is made in selecting the patient for operation or in selecting the operation for the patient. If patients who are recognized as poor surgical risks are accepted for operation, a higher mortality rate must be looked on as unavoidable (Tables I, II and III).

TABLE I.—TWELVE HUNDRED TWENTY-FOUR OPERATIONS ON 677 PATIENTS WITH EXOPHTHALMIC GOITER.

	Operations	Patients	Males	Females	Average							Per cent				
					Age, years	Durations of goiter, months	Duration of hyperthyroidism, months	Loss of strength, graded 1, 2, 3, 4	Loss of weight, pounds	Pulse rate	Basal metabolic rate, per cent	Vomiting	Diarrhea	Edema	Previous thyroidectomy	
Group 1 Primary * thyroidectomy	212	212	42	170	36.5	43	33	1.40	14	111	+36	21	29	30	47	
Group 2 One ligation followed by thyroidectomy	264	133	32	101	36.5	27	15	1.06	19	117	+51	22	25	31	8	
Group 3 Two ligations, rest, and thyroidectomy	577	240	84	248	35.6	33	17	2.22	22	124	+63	36	31	46	1	
Ligations **	171	92														
Averages	1224	677	158	519 (1:3+)	36.2	35	22	1.75	18	117	+60	28	28	34	56 85	

* The term "primary thyroidectomy," in this paper denotes the resection of the thyroid gland without preliminary surgical preparation. It will be noted that forty-seven patients with recurrent exophthalmic goiter are included in this group.

** Ninety-two patients have not yet returned for thyroidectomy.

TABLE II.—TWO HUNDRED EIGHTY-ONE OPERATIONS ON 281 PATIENTS WITH HYPERFUNCTIONING ADENOMATOUS GOITER.

	Operations	Patients	Males	Females	Average					Per cent		
					Age, years	Duration of goiter, years	Duration of hyperthyroidism, months	Basal metabolic rate, per cent	Edema	Cardiac dilatation	Auricular fibrillation	
	281	281	39	242	46.7	15.5	2.2	+34.1	37	26	7	

TABLE III.—HYPERFUNCTIONING ADENOMATOUS GOITER—DATA RELATING TO FOUR DEATHS.

Case	Sex Age	Duration of goiter, years	Duration of hyperthyroidism, years	Loss of weight, pounds	Loss of strength graded 1,2,3,4	Pulse	Basal metabolic rate, per cent	Edema	Fibrillation	Myocardial degener- ation, clinical diagnosis	Death after operation	Clinical cause of death	Findings at necropsy
325697	F 56	12	.25	7	2	128	+50	+	+	36 hrs.	Myocardial degeneration	Hyperthyroidism	Chronic nephritis; hemorrhage in endo- cardium of the left ventricle
361539	F 60	20	1	6	1	108	+20	+	-	56 hrs.	Pneumonia	Bilateral lobar pneumonia	
361356	F 61	30	10	36	3	104	+37	+	+	38 hrs.	Myocardial degeneration	Myocardial degener- ation; broncho- pneumonia	
323964	F 69	2	2	7	3	118	+46	+	+	7 days	Pneumonia	Bronchopneumonia; nephritis; arterio- sclerosis (marked)	
Averages Age 61.5		16	3.3	22	2.25	116	+39	100%	75%	75%			

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DISCUSSION OF PAPER OF DR. PEMBERTON.

DR. A. C. PORTER, Boston, Mass.: I will not read a paper, as the analysis of my individual cases is not yet completed. With Dr. Pemberton's conclusions, I am in entire agreement, except that I consider the x-ray a more valuable method of treatment than he apparently does. At the Massachusetts General Hospital, for the last two years, we have had a thyroid clinic, represented by two radiologists, two medical men, and two surgeons. In this clinic is discussed each individual case, in an endeavor to decide which form of treatment is the most beneficial. I believe we arrive, in the majority of cases, at almost a unanimous opinion.

Dr. Means has devised a thyroid chart, examples of which I will pass about. For purposes of tabulation, this has been found very valuable, for at a glance one can notice the changes in the pulse rate, which is marked in red; of the weight, which is marked in green, and of the metabolism, which is in black. You can readily determine the result of one or two years' treatment, by the months. It gives the dates of the x-ray treatments, if any, and in addition, shows whether the patient is at rest, partial rest, or leading a normal life. The chief symptoms and signs are quickly noted. There is, furthermore, recorded the duration and kind of medical treatment, the dates of the surgical operations, if any, the laryngoscopic examination, before and after operation, the pathological report of the gland removed, and the end-result to date.

On the whole, our attitude has been favorable to x-ray treatment, rather than operation in the mild cases of Graves' disease, but we are less inclined to so treat toxic adenomata. In severe forms of Graves' disease, we have, at first, advised complete rest, with appropriate drugs, and x-ray treatment, until the patient has become stable. By this, I mean that the pulse, which usually decreases after rest, reaches a constant level, and the metabolism ceases to fall. Then the decision is made between a continuance of such treatment or operation. We feel sure that x-ray will cure certain cases. On the other hand, there have been instances where no apparent im-

provement followed x-ray treatment, even continuing for one year and a half. In two of these cases, preliminary ligation and subtotal thyroidectomy caused rapid improvement and normal metabolism.

The question as to whether previous x-ray treatment makes operation more difficult is not yet determined. Occasionally, without any such treatment, we find definite adhesions of the gland capsule.

When symptoms have recurred after hemi-thyroidectomy, success often has followed radiation of the other half of the gland.

Myxedema undoubtedly in one case and probable in another, followed x-ray treatment, and there are two cases of abnormally low metabolisms with markedly increased weight, but without other symptoms, which have occurred after thyroidectomy.

Our real problem, yet to be determined, is the proper treatment, in moderately severe Graves' disease, in which there is some, but probably not great risk from operation. In general, if we have erred, it has been on the side of favoring x-ray treatment, in such cases. We feel convinced that ligation of the superior thyroid vessels is of benefit, and it is usually followed by some gain in weight, a lowering of the pulse, and a fall in the basal metabolism. Very rarely, however, has ligation alone, or combined with x-ray, produced a cure in severe cases, without a subsequent thyroidectomy.

In attempting to analyze the end-results of these cases, which are reported to date, I am struck with the connection between neuroses, psychoses, and Graves' disease, but am yet unable to determine the causal relation among them. It seems as if a group of patients were congenitally, temperamentally and nervously unstable, and upon this condition Graves' disease became grafted.

I could give many instances where, after operation, which was not particularly dreaded, weight was markedly gained, the pulse was approximately normal, the tremor disappeared, the metabolism was reduced to normal limits, but the neurotic symptoms did not disappear. Several of these patients required sanatorium or even treatment in asylums for mental diseases. I have also been struck with another group of cases, in which other chronic conditions prevent cure; such as different heart lesions, arteriosclerosis, and diabetes.

The menopause, coinciding with a full-grown Graves' disease, offers symptoms which are rather complex, and of rather doubtful prognosis. In climacteric Jewesses, owing to lack of control, the op-

erative risk is bad. By judicious use of rest, x-ray treatment, and operation, the mortality can be reduced to a low figure. I am sure that ultimate subtotal thyroidectomy offers a minimum risk of myxedema, and our greatest guarantee for rapid and permanent cure.

In regard to the technique of the operation, preliminary superior thyroid ligation is usually performed under local anaesthesia, or gas and oxygen, at which time one artery, or both, are ligated, and the vessels cut between the ligatures. Considerable induration often follows this small operation, and occasionally infection.

There is no doubt that a collar incision is best, after which, if the thyroid is large, the sternohyoid and thyroid muscles can be divided transversely, and the sternohyoid, without harm, may be cut through its inner half. Hemorrhage, although often troublesome, is very rarely serious. The chief danger of the operation, *per se*, is injury to the recurrent nerves. This results commonly from four causes:

1. Injury to the nerve in some way, where a large lobe must be delivered by blunt dissection from the superior mediastinum.

2. Traction of the lobe to the median line and upward stretching the nerve.

3. Clamping the nerve, particularly in lobectomy, in an endeavor to anticipate or stop hemorrhage from the inferior thyroid vessels.

4. Where the nerve is avoided, with all possible care, but a hemostatic forcep or ligature slips. Profuse hemorrhage occurs, and in stopping it, the nerve is clamped in a bloody field. I have several times noticed this, from a change in the patient's breathing, or, in the voice, the patient being under local anaesthesia.

More recently, an attempt has been made to leave the posterior part of both lobes intact, but even then there is possible injury to the nerve, where hemorrhage from remaining lobes is controlled by deep stitches or by means of a hemostatic forcep.

Fortunately, even complete paralysis of one nerve, so far as the voice is concerned, is compensated for by the other vocal cord, in from six months to a year. Unless actual laryngoscopic examination is made, the absence of hoarseness does not preclude such injury, which I am convinced is more common than surgeons believe.

Another lesion of the cords, for which no really adequate explanation is given, is bilateral abductor paralysis, in which both vocal cords lie rigid, and very close together. The voice, although high-pitched, is often not hoarse. The chief symptom is stridor upon exertion, and always, in the background, is the danger of edema, and the sudden necessity of tracheotomy. I have seen in all five such cases. One of them died early in an attack of influenza; in two, tracheotomy was performed; one of these had a complication of moderate infection, and the other a very considerable post-operative hemorrhage into the wound. In my paper, soon to be published, I shall discuss, more in detail, this rare, but very serious complication of thyroidectomy.

At the Massachusetts General Hospital, we are slowly working out, by means of a method including rest, x-ray and operation, a way of treating Graves' disease, which is steadily decreasing the mortality. The error of the past has been a too early radical operation, instead of operation in one, two or three stages.

DR. J. H. MEANS, Boston: Mr. President and members of the New England Surgical Society—I want to thank you for asking me to take part in the discussion. I think there is almost nothing in medicine that is more uncertain than the proper way to treat exophthalmic goiter. I have two quotations from the literature which show what a tremendous divergence of opinion there is in current day literature.

For example, Sistrunk of the Mayo Clinic says: "Fortunately and unfortunately, patients improve when treated medically; fortunately, because patients unfit for surgical treatment may improve to such an extent that they may become fairly good surgical risks; and unfortunately, because a knowledge of the fact that improvement occurs under medical treatment leads many practitioners to use only medical measures in the management of exophthalmic goiter, apparently without fully realizing the sad state to which a large percentage of the patients thus treated will be ultimately reduced."

Now here is an opinion which is diametrically opposite. It is by McCarrison, who says: "With regard to the treatment of Graves' disease by surgical interference with the thyroid gland there are two questions which demand an unhesitating answer in the affirmative before this treatment can be admitted to be justifiable: (1) Is Graves' disease the direct outcome of the flooding of the organism with thyroid substance as it is stated to be by Biedl? (2) Does operative interference with the thyroid gland effect what medical and surgical treatment cannot do? With regard to the first the answer has been given. . . . ; it is quite definitely in the negative." With regard to the second, he goes on to say the average percentage of cures by twenty-six different operators "is not a sufficient improvement on medical treatment to justify an operative mortality which . . . ranged from 1.3 to 80%."

With regard to the question of infection, McCarrison believes that exophthalmic goiter is an infectious disease. I am not sure whether he is correct, but at any rate he points out other things than the thyroid which need attention, which is a healthy view to bring up. The only point I want to make is that although modern surgery is producing good results, after all, surgery of the thyroid is not the ideal treatment because we are not removing the cause of the disease. I don't believe that the cause of the disease is in the thyroid. Surgery removes perhaps a part of the disease. We have been working with x-rays at the Massachusetts General Hospital, and some of the cases do well with that, but only about 50% do well. What the x-ray does we don't know; it does something to the thyroid because once in a while we get myxedema. You also occasionally get it after strumectomy. Myxedema can be cured by giving thyroid by mouth. By irradiation one can treat not only the thyroid but the thymus as well. And, I believe, that the thymus has something to do with Graves' disease. But that procedure, like surgery, is not acting on the cause of the disease. What we need is not to be content with the excellent results of surgery but to strive further to find the cause of the disease and not simply treat the result which perhaps the thyroid gland is. I think that Dr. Cannon's work is stimulating. He got a disease in cats which resembles Graves' disease, by grafting the phrenic nerve into the sympathetic chain. He got the cardinal symptoms of exophthalmic goiter, and there the cause of the disease wasn't in the thyroid but certainly outside.

DR. FRANK H. LAHEY, Boston: The thyroid question always seems to be a burning one. You can raise an argument anywhere on this question. This is due to the fact that it is as yet far from solved.

Regarding metabolism, I agree with Dr. Pemberton that it represents the degree of toxicity, but only approximately, however.

In respect to its indicating a safe outcome with operative procedures when low, we have had a case similar to the one reported by Dr. Pemberton, published in *Maine Medicine*, and are sure that its prognostic value, when considered alone, is very un-

reliable. It must be taken into consideration together with other factors, such as the cardiac reserve, length of the disease and general clinical picture of activity of the disease.

We are very much interested in the cases which are clinically improved by ligation, gain weight and become good risks, and endure the final and complete operation well, but still show an increase rather than a drop following ligation. We have no explanation for this which is satisfactory and convincing to us.

We do not use local anaesthesia in the complete operation. We did a series with it and gave it up. We believe it takes too much out of these nervous and excitable patients. That which is desired is the reverse of excitation, which is the rule with local anaesthesia. We employ scopolamine, morphine and gas oxygen.

We take them to the operating room and give them gas—if they are very toxic we send them back to the ward to see how much they react to this. If they react badly we inject boiling water until they will stand ligation. If able to, we tie one pole, send them back to the ward, and if they are sick enough to worry us we take them back to the operating room four times, tying one pole at a time. If then we have a background of five trials with a graphic chart of the pulse during the operation, we think that they will stand the final operation, or from this background we can tell whether or not they will stand it. Of course, this is the procedure only in the doubtful cases. There is no doubt in our minds that these patients do acquire a tolerance by repeated operative procedures.

We have reached the place where we do not worry about operative deaths, as we are able to avoid these. We worry now about the uncertainty of the degree of post-operative reaction, and it is this uncertainty which makes us extremely conservative in the surgical measures which we employ in this disease.

X-rays: I cannot say anything yet regarding x-ray. We have treated a small series of cases at the Boston City Hospital, and feel that we have not accomplished enough to report yet one way or the other.

Why do operative failures occur? Because patients are operated upon who are suffering from neurosis and not hyperthyroidism; also because enough thyroid tissue is not taken out, and, perhaps, there exists coincidentally, hyperthyroidism and a neurosis of the circulatory asthenic type.

Book Reviews.

Massage and Medical Gymnastics. By EMIL A. G. KLEEN, M.D., Sjövik, Saltsjöbaden. William Wood & Company, Publishers.

The book on *Massage and Medical Gymnastics*, by Dr. Kleen, is a revised and improved edition of his textbook which has been in use more than a quarter of a century. In addition to the original book there is a section by Arvedson on Ling's medical gymnastics, by Zander on the mechanical method of medical gymnastics, and a chapter by Dr. Patrik Haglund on the use of medical gymnastics and massage in orthopedic surgery.

The book has the advantage not only of being written by a doctor of medicine, but has been translated by a doctor of medicine, connected

with the Chelsea Physical Training College in England. It contains also a foreword by Mr. R. C. Elmslie, a distinguished London surgeon, defining the field of physical therapeutics, especially in relation to orthopedic surgery, and commenting on the need of the education of the medical profession in the elements of rational physical treatment, and making the masseur understand that he is a skilled worker in a particular branch of therapeutics and not omniscient in all branches of medicine and surgery.

Dr. Kleen has much criticism to make of the methods of training in the official schools of massage and physical exercises in Sweden, and he deplors the result of the system which has led to the setting up of a class of gymnasts possessed of an official diploma, who consider themselves qualified to treat without medical consultation or supervision.

The book opens with a critical introduction giving a history of massage and the criticisms above referred to, following which comes a careful consideration of the meaning of massage and its technique, therapeutic effects, and contraindications to its use. These are written from the point of view of a doctor and the physiology of massage is given. Medical gymnastics have been considered in the same way with regard to technique, effects, and contraindications, and then the author passes to a detailed account of Swedish gymnastics, giving their application to abnormal conditions. Then follows an admirable article by Haglund on the treatment of wry neck, lateral curvature, joint deformities and certain congenital conditions. The article on scoliosis is particularly noteworthy, in calling attention to the fact that the treatment by gymnastics has a limited applicability and cannot be regarded as the cure-all so often advocated. He warns that it is not well for people with no medical training—masseurs, gymnasts, etc.—to undertake the treatment of other than light cases, but that in all severe cases the responsibility should be entrusted to the doctor. The next chapters deal with the application of medical gymnastics to eye, thoracic and abdominal organs, uro-genital apparatus, and the nervous system, finishing with a consideration of disorders of nutrition.

The book is well arranged and well balanced, and although the pictures are poor the subject does not require pictures giving detail, and they serve well enough. A detriment to the book is that hardly any references are given, and if one were looking into the physiology of massage in this book it would require a great deal of labor to verify the references. The translation is well done, and the book is to be recommended to those wishing to familiarize themselves with the present-day status of massage and gymnastics from a scientific and rational point of view.

Pulmonary Tuberculosis. By SIR JAMES KINGSTON FOWLER, K.C.V.O., C.M.G., M.A., M.D., F.R.C.P., D.Sc. (Hon.) London: Macmillan & Co., Limited, St. Martin's St.

It is a very real privilege and pleasure to read and review this book by Sir James Fowler. It is a small volume of 284 pages, with excellent paper and print. It is, perhaps, a little unfortunate that the print is so small. The contents, however, are of such a high degree of excellence that one can easily overlook this minor defect. There are over 50 excellent illustrative diagrams, micro-photographs and plates. His references are largely to English and American authors, the preponderance naturally in favor of the former. It is somewhat refreshing to see that there are not elaborate lists of references to German writers. As he frankly states, "This book may here and there be found to differ somewhat as to style from that generally adopted in serious medical works of the present day, in which the writers, through many dreary pages, unrelieved by a single personal touch, are wont to cite on one side of a disputed point five German authors" There is in this book a personal touch which is so much lacking in many volumes equally and perhaps more erudite, but which lose much of their value because of this lack.

His review of the history of tuberculosis is full of quotations and striking passages from the works of the men to whom he refers. His chapter on the "Rôle of Heredity in Pulmonary Tuberculosis," is interesting and fair to both sides. The conclusion which he reaches is, perhaps, unsatisfactory, but the only possible one, namely, "that the attempt to state with scientific precision the influence of the hereditary factor in pulmonary tuberculosis is doomed to failure." In discussing the "Rôle of Infection in Pulmonary Tuberculosis," he makes his points very effective by giving a series of questions and answers purporting to be a dialogue between a patient and physician. This is a novel and striking way of teaching.

Para-tuberculosis is the name which he gives to serofula and bovine tuberculosis and non-pulmonary forms of tuberculosis of various kinds. On the whole, this term is rather a good one. He does not put much faith in the theory that childhood infection with bovine tuberculosis conquers much of the immunity from human strains later on. In discussing the incidence of tuberculosis in the population of the United Kingdom, he rather shocks us by scoffing at the idea that upwards of 70-80 per cent. of normal, healthy adults are already infected with tuberculosis. He believes that this percentage is not over 9 per cent. He bases this belief on the experience of certain native troops from India, Africa, and other distant places, who, according to his

way of thinking, became infected with tuberculosis while in barracks and dugouts in France. I do not feel that this line of argument is a good one or a tenable one in the slightest. I am sure that the majority of American students of this subject would agree that 9 per cent. is altogether too low a figure for the general incidence of tuberculosis.

In his chapter on anatomy of the thorax, he emphasizes the importance of knowing the exact location of the various lobes of the lungs. In "Physical Diagnosis," he calls attention to the normal defects between the right and the left apex. He goes into great detail as to the different varieties and forms of râles, more so than is wise or necessary. I am strongly inclined to believe that much time and thought are wasted in trying to differentiate between different varieties of râles and to read various conclusions from such differences.

He objects to the terms "open" and "closed" tuberculosis, and believes that the terms "positive" and "negative" tuberculosis should be substituted.

The one real disappointment in this book is the scanty attention paid to the disease of the intrathoracic glands. Less than three pages are devoted to this subject, which is entirely out of proportion to its importance. Personally, I am inclined to believe that a sound and thorough discussion of the subject of juvenile tuberculosis is more important than any other phase of the disease.

He calls attention to the difficulties in diagnosing a case of arrested fibroid tuberculosis, particularly when it occupies only a small area and is surrounded by emphysematous lung. In discussing chronic tuberculosis of the lungs, he gives an interesting conversation between a pathologist and a tubercle bacillus as to why the tubercle bacillus elects the apex instead of other parts of the lungs, etc. He takes up five modes of onset: (1) Insidious; (2) Bronchial Catarrh, followed by Emphysema; (3) Pleuritic Onset; (4) Haemoptotic Onset; (5) Laryngeal Onset.

He devotes a chapter to "Aneurysm of the Pulmonary Artery," which he calls a common and fertile source of hemorrhage. There are many of us who, perhaps, would not agree with this. His chapter on hemorrhage and treatment, however, is excellent.

His opinion as to the value of the x-ray in the diagnosis of pulmonary tuberculosis is likewise sound and sane. One of the best features of this book is his remarks on prognosis. This he starts with a condensed conversation of his opinion on this subject by the following statement: "No fool ever gets rid of tuberculosis of the lungs." This chapter alone makes the book well worth reading.

Under climatic treatment he makes another statement with which I at least would not

agree, namely, "Never advise a patient to go to any place which you have not visited yourself." In England, where distances are not great, this may be a wise precaution. It would be interesting to know what would be Sir James' reaction were he practising in this country, where time, distance, and carfare would render such action on his part as rather futile. He believes that more patients have done themselves harm by taking up play after too short an interval of rest than they have by taking up work. He is a strong believer in the graduated exercise and autoinoculation as carried on by Marcus Paterson.

His chapter on tuberculin in diagnosis and treatment is short and to the point. It is evident that he does not approve of the use of tuberculin either for diagnosis or treatment. With this I am in hearty accord as far as pulmonary disease is concerned.

His final chapter is entitled "*Obiter Dicta*." This review cannot be better ended than by quoting some of these:

"The mortality statistics of the Allied Armies in France furnish some difficult problems for those who do not believe in the importance of infection as a factor in the spread of pulmonary tuberculosis."

"The percentage of the population of Great Britain who carry in their lungs evidence of having been, at some period of their lives, the subjects of tuberculosis which underwent spontaneous arrest, is 9 per cent., not 70, or 80, or 90 per cent."

"A knowledge of the relation of the lobes of the lungs to the chest walls is of great advantage in the diagnosis of pulmonary tuberculosis."

"The lesions of pulmonary tuberculosis do not 'open' and 'close' like a mollusc."

"The collection of pathological material and the reading of laboratory reports will never make a physician."

"No member of the medical profession should be paralyzed because the laboratory boy is at dinner."

"Para-tuberculosis, as a name, is preferable to bovine tuberculosis. Its use will, in time, lead writers to draw more distinct pictures of the clinical features and morbid anatomy of the disease as it shows itself in the human body, whereas the retention of the word bovine accentuates the fact that it has come from *an ox*."

"A tuberculosis dispensary that has become a 'tuberculin' dispensary has become a very dangerous place."

"A diploma in tuberculosis for those who are to deal with tuberculosis is just as necessary as a diploma in tropical medicine for those who are to treat tropical disease."

"A stethoscope is easier to carry than a cardiograph or an x-ray installation."

"Every General Hospital should have Diagnosis wards."

"Probably since the beginning of the world, it was never so dangerous to be alive as at the present time."

"No fool is ever cured of tuberculosis of the lungs."

I would strongly advise everyone interested in tuberculosis and in this phase of internal medicine to read this book.

Studies from the Rockefeller Institute for Medical Research. Reprints, Volume xxxix, 1921, 662 pages.

The reputations of the various contributors make it unnecessary to praise these articles, and therefore this review will try to indicate the gist of such of them as seem to have a clinical bearing. In general, the greatest number listed in the table of contents are in the field of pathology, namely, 19, then diabetes with 7, then chemistry with 4, and miscellaneous, 13.

The articles which happened to engross the reviewer (an internist) were F. M. Allen's seven experimental studies in diabetes, Series II. These cover 137 pages, or about a fifth of the entire volume, a mass of intricate data on dogs. The discussions and summaries, however, are of the greatest interest in relation to man. The same comment may be made to the ten fascinating studies on experimental pneumonia in monkeys, by F. G. Blake and R. L. Cecil, recently published from the same institution.

The present Series II deals with the "internal pancreatic function in relation to body mass and metabolism." Carbohydrate assimilation was altered in many ways, with results of which the following seem worth notice.

1. Though approximate information is derivable from assimilation tests, neither the feeding of glucose nor of a mixed meal is necessarily decisive concerning the precise stage of an animal as respects diabetes.

2. The pancreatic element is not present in the superabundance ordinarily supposed—a mere "factor of safety" is not demonstrable; "on the contrary, there must be frequent occasions in ordinary life (such as the eating of a box of candy by a human individual), when the full power of this tissue (islands of Langerhans) must be exerted if the assimilation is to be strictly normal."

3. The curve of falling tolerance is not a straight line; that is, tolerance is lost for a time gradually, then abruptly, after reaching the sharp and definite point at which diabetes begins (experimentally). "An animal may be brought so close to the verge of diabetes that it is brought on by the removal of as little as 0.1 gm. additional tissue."

4. "When considerable masses of active tissue, especially muscle, are suddenly lost, as in removal of a limb by amputation, the effects upon the assimilation are negligible compared with those of similar losses of weight produced by undernutrition. It may, therefore, be concluded that the effects of undernutrition are not due to a reduction of active protoplasm, but rather to a reduction of food supplies and metabolism."

5. "Undernutrition should be continued to the point of relieving the pancreatic function from overstrain revealed by the most delicate tests, particularly hyperglycemia."

6. "The fundamental value of exercise is probably as a form of undernutrition. The combustion of calories by exercise, however, is not as beneficial as omitting them from the diet, and loses its potency at a stage (increasing severity) when dietetic undernutrition is still effective . . . the thorough dietetic treatment thus involves two changes from former practice: On the one hand, heavy exercise, as advocated by the earlier clinicians for burning up surplus sugar, is discouraged; on the other hand, the hygienic benefits of lighter exercise are made available to many patients to whom exercise was formerly forbidden."

7. "The impression that diabetic patients do worse in cold weather is probably explainable by the discomfort of chilliness when they are undernourished, the tendency to take more food, and, sometimes, by the limitation of exercise. These may be important from a practical standpoint, but any direct influence of climate upon diabetes must be slight, if it exists."

8. "Experimental evidence makes it easily comprehensible that . . . glycosuria may be delayed to a time when there is no plain clinical connection."

9. "A distinct lowering of carbohydrate assimilation was shown during pregnancy . . . regarded chiefly as a toxic manifestation."

Turning now to other topics which have promise of practical, as well as pure scientific interest, one notices the following: A mechanical measuring instrument for aliquot portions of sterile or other liquids, prophylactic inoculation against yellow fever, gigantism and the anterior pituitary, induced atrophy of tonsils by x-ray leucocytic response in tuberculous infection, a new test for protein in the spinal fluid, preservation of stock cultures of bacteria, food requirements of children, determination of chlorides in plasma, transmission of measles to monkeys, and excretion of urea.

Aids to Medicine. By BERNARD HUDSON, M.D. Third Edition. Pp. 370. New York: William Wood and Company. 1921.

This little book is disappointing from the fact that, while it contains much excellent, con-

cise description, it reflects in the main the medical knowledge of twenty years ago and omits, or slurs over, many points which represent important recent advances. For instance, under Typhoid Fever, the first disease discussed, no mention is made of diagnosis by blood culture, upon which we in America now so largely depend for early and conclusive proof. The diet in typhoid fever is still described as "mainly milk," without reference to the desirability of furnishing more nearly adequate caloric values. The serum treatment of meningitis and the salvarsan treatment of syphilis are given only perfunctory mention in such a way as to suggest that the author has had little or no personal experience with them. The book may be of some value to very elementary students who wish to make a rapid survey of the field which they are beginning to study, but cannot be recommended to students who are approaching their examinations for graduation.

Health Education and the Nutrition Class. By JEAN LEE HUNT, BUFORD J. JOHNSON, Ph.D., EDITH M. LINCOLN, M. D. New York: E. P. Dutton Company. 1922. 281 pages.

The Bureau of Educational Experiments presents, through the three authors of this volume, a worth-while record of an experiment in health education as worked out in a large New York public school, using the nutrition class as a point of departure for the work. Here is offered a volume which should be of value as a work of reference to others engaged in this field of endeavor.

In addition to the tables and statistics, with which the book is liberally provided, the following paragraphs suggest its scope and findings.

"One of the most important things shown in this whole study is how the nervous systems of children of good nervous stock can resist malnutrition of an extreme degree extending over three years.

"Aside from extreme cases of malnutrition, of prolonged hunger or starvation which, like other pathological states, would cause disintegration, we cannot say that malnutrition, irrespective of other factors, produces or runs hand in hand with mental defectiveness. In many types of mental processes, the reactions of the undernourished child are equal or superior to the average of his age group. The traits in which he may prove less capable seem to be resistance to fatigue under response to uninterrupted or complex stimuli, and exaggerated emotional responses under normal stimulation. A problem worthy of study both for the undernourished and for the hearty child is fatigue, with special reference to the period of recovery.

"In connection with such experiences we

must appreciate that the program that educates to the importance of caloric intake, without special emphasis on conceptions of balanced feeding and vitamin intake, is inadequate.

"Our initial program for diet and school feeding especially emphasized the importance of caloric intake, and in this followed the general lines prescribed by Dr. Emerson. Insistence on the elimination of tea and coffee, and on milk as an essential of the child's dietary, however, adds to his program some additional elements of importance, and the emphasis on cereal foods is a particularly practical method of supplementing the dietary with inexpensive carbohydrate foods, with the least possible danger to interference with the family budget and customary menu. Our experience seems to indicate the insufficiency of this simple program, for a community of the kind in which we were working. Acquaintance with the dietaries of the homes shows lack of knowledge as to balanced diet, lack of knowledge as to vitamins, their place and importance, as to fats and the ability of young children to digest them, as to the peculiar properties of milk, and as to the undesirability of condiments, especially in the diet of the child. Incomplete as present knowledge in regard to food properties must be admitted to be, very considerable progress in this field of science has been made in recent years, and any program of health undertaken in the school must take cognizance at least of the best authenticated facts of recent laboratory experiment.

"The efficient program of health education must recognize the primary importance of nutritional status as a basis for estimating general physical condition among children.

"Results of the health program should be evaluated currently through individual records of growth increment and nutritional status.

"The resources of the school for supplying the chief provisions essential to the success of an educational health program are greatly superior to those at the command of any other agency.

"The preventive program of health education must be basic, an integral part of the school's general thinking, administration and equipment.

"The school can greatly strengthen its educational practice by making the adjustments in its equipment and procedure demanded by the health program."

The Glands Regulating Personality. By LOUIS BERMAN, M.D., Columbia University, New York City. Macmillan Company. 1921.

Berman presents two hundred and ninety-one pages of mingled fact and fancy, written in the somewhat emotional futurist style of a best seller, and seemingly offered to titillate the palate of the laity rather than to advance the

cause of scientific medicine. The following extracts are illustrative:

"'Man, know thyself,' said the old Greek philosopher. Man perforce has taken that advice to heart. His life-long interest is his own species. In the cradle he begins to collect observations on the nature of the queer beings about him. As he grows, the research continues, amplifies, broadens. Wisdom he measures by the devastating accuracy of the data he accumulates. When he declares he knows human nature, consciously cynical maturity speaks. Doctor of human nature—every man feels himself entitled to that degree from the university of disillusioning experience. In defense of his claim, only the limitations of his articulate faculty will curb the vehemence of his indictment of his fellows.

"Think up objective physiologies in which your life and mine become a series of concatenated influence and compound reflexes. Play with words like the concentration reflex when you mean idea, and the symbolic reflex when you mean language. But your most rigid nomenclature will never abolish the mystic personal purpose in the equation, no matter how low the step in the animal series to which you descend. The declaration that a man is dominated by certain glands within his body should not be taken to give aid and comfort to those who would banish mind from the universe.

"Already the outlines of a differential anatomy, and a different physiology and a differential psychology, which will explain to us the unique in the constitution, the temperament and character of an individual, emerge. It is worth while, before proceeding to the details, so valuable to a society which would become rational, to summarize the general principles emerging, expressing the directing powers of the ductless glands over the individual. They may be regarded as the present postulates of a new science of the whys and wherefores separating and setting apart, as so recognizably distinct, those peregrinating chemical mixtures: men and women.

"The internal secretions are the most hopeful and promising of the reagents for control yet come upon by the human mind. They open up limitless prospects for the improvement of the race. A few hundreds of investigators are engaged upon their study throughout the world.

"That is one of the ironies of our contemporary civilization. A concerted effort at the task of understanding them, backed by the labors of tens of thousands of workers, would, without a doubt, accomplish as much for humanity as the vast armies and navies that consume the substance of mankind. If we could not obtain Utopia then, we might at least, by abolishing the subnormals and abnormals, who constitute the slaves and careerists of society, render the human race less contemptible and more divine."

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THE WORKMAN'S COMPENSATION LAW.

THE time has come when the members of the medical profession of this Commonwealth must take account of stock and determine whether it is worth while to act as a unit in protecting such rights as they have under the Workmen's Compensation Act, or taking things for granted, permit valuable rights to be taken away from them. Notwithstanding broad and liberal rulings by the Industrial Accident Board, the scope of the law is gradually being narrowed by Supreme Court decisions and both the rights of physicians and their patients are being jeopardized.

It is not so long since the members of the profession had their attention directed to the narrow interpretation of the medical provisions of the law in Huxen's case, a full report of which was printed in the columns of this JOURNAL. In that case the Court in effect held that however serious and unusual a case might be, medically, when an employee was able to walk to the office of his physician, there was grave doubt as to whether the case could longer be considered unusual and the insurance company liable for the services of the physician.

The exact language of the Court in Huxen's case, in part, follows:

"The obligation to provide such (medical)

attendance as an absolute duty is confined to two weeks after the injury. It is manifest that in the aggregate there must be many cases where medical attendance may be required for a longer period. It is not in an ordinary case requiring longer medical attendance that the discretion of the Board may be exercised to charge this attendance to the expense of the insurer. It is only in 'unusual cases' that they may do so. There would be grave doubt whether a case where the employee is able to go from his home in Cambridge to an office in Boston could be so unusual as to be within the purview of the Act."

Now, as will be noted by a perusal of the Golden case, the Court has once more overturned a decision of the Industrial Accident Board awarding something like \$600 to a masseuse, on the ground that the services so rendered were not actually under the "control and direction" of a physician. Following this decision, some insurers have felt encouraged not to pay for such services as massage, baking, etc., bills for ambulance hire, amounts expended by employees in their journeys to and from insurers' offices, or clinics, to receive medical treatment, and have generally adopted a narrower attitude towards medical charges than prior to the handing down of this decision.

The decision of the Court in the Golden case also indicates that a physician, unlike an employee, has no right to a review of his decision by the full Board. In other words, while he has the right to present the evidence in his case to a single member of the Board, that single member does not make a decision from which he might claim a review, if deemed expedient, but the member merely acts as a medium through which the evidence is reported to the Board, and the full Board, without hearing the doctor, makes a decision on the bare record.

To remedy this state of affairs, several bills have been introduced which will fully and properly safeguard the rights of physicians and their patients, the employees of the State. In addition to bills which will remove the effect of the decision of the Court in both the Huxen and Golden cases, other amendments have been offered which will provide for the payment of compensation and medical charges for both personal injury and disease; giving full-time medical treatment; doing away with the provision in regard to "unusual cases"; and other perfecting amendments which will give the medical profession the protection to which they are reasonably entitled.

The legislative committee of the Massachusetts Medical Society will have the various bills before them for consideration and, of course, will be delighted to have the coöperation of members of the profession in the various sections of the State. Would it not be well for all the members to interest themselves in this new

legislation and advise the legislative committee how the land lies in their respective districts?

THE GOLDEN CASE AND ITS RELATION TO PHYSICIANS.

We print below a copy of the decision of the Industrial Accident Board and of the Supreme Judicial Court, reversing the Board's decision, for the information of the medical profession. A perusal of this decision will indicate that the Court is of the opinion that physicians are entitled only to present their evidence, in any given case involving their fees, to a Board member, without right of review by the full Board, the single member reporting the evidence for decision to the full Board. This is a situation which should be remedied by appropriate legislation, as a physician should have the same right of review as an employee. The decision also holds that services rendered by a masseuse are not medical services, at least unless such massage is rendered by the physician, or under his direction and control. The record follows:

WORKMEN'S COMPENSATION ACT, INDUSTRIAL ACCIDENT BOARD, BOSTON, MASSACHUSETTS.

M.L.R., Case No. 9080.

Newton Golden, Employee.

Worcester Electric Light Co., Employer.

Employers Liability Assurance Corp., Ltd., Insurer.

Gertrude R. Doyle, Masseuse.

Findings and Decision of the Industrial Accident Board. The above case, the request of the masseuse for the approval of her fee for services rendered for the employee under Part II, Section 5, on the ground that this is an unusual case, was heard by Mr. Dickinson, representing the Board, at City Hall, Worcester, Mass., on Tuesday, Sept. 7, 1920, at 10 a. m.

Appearances: J. Joseph McCarthy, Esq., counsel for employee; Herbert H. Wise, Esq., counsel for insurer.

Question: Whether the services of Miss Gertrude E. Doyle as masseuse were medical services in an unusual case for the employee, and if so, to what extent, and what is a reasonable charge.

Agreed statement of facts made by the claimant, Miss Gertrude R. Doyle, and counsel for the parties at the hearing.

Employee was injured on March 29, 1918, while working for the Worcester Electric Light Company. He fell a distance of 20 feet, striking his shoulder, which resulted in complete atrophy of his right hand and arm. He was paid compensation for 7 months following the injury and was later paid \$500 for loss of the use of his hand. He was never paid anything for partial disability. He was treated every day from September, 1918, to the present time, practically one year. He has been treated six days a week from the Monday following Labor Day, 1919, to the present time, with the exception of Christmas Day, two days in February, and the Saturdays of August and September. Employee had a hospital bill of \$17.50 in February, 1920. He was employed at the time of his injury as a machinist, and his wages were \$19 a week. He went to work following the injury in October, 1918, as a watchman. He is an elevator freighter. The bill for massaging amounted to \$900, which consisted of 393 treatments at \$3 a treatment.

Decision of the Board. The Industrial Accident Board find and rule, upon all the evidence, that this is an unusual case under Part II, Sec. 5, of the Act, the injury of March 29, 1918, having resulted in

complete atrophy of the employee's right hand and arm, and necessitating medical treatment by the petitioner, Gertrude E. Doyle, as masseuse.

It is found that \$900, allowing \$2 per treatment, is a reasonable bill for the services rendered by the petitioner, and this bill is approved for payment by the insurer.

WM. W. KENNARD.
DAVID T. DICKINSON.
JOSEPH A. PARKS.
CHESTER E. GLEASON.

GOLDEN'S CASE.

JENNEY, J.—The employee, on March 29, 1918, while working for the Worcester Electric Light Company, received an injury to his shoulder resulting in the complete atrophy of his right hand and arm. On January 15, 1920, the insurer paid to him under the provisions of the Workmen's Compensation Act \$500 as specific compensation for "the loss of the use of his hand," apparently on the ground that it had been so injured as to be permanently incapable of use. He was also paid compensation for seven months following the injury, but received nothing for partial disability.

From early in September, 1919, to the date of the hearing upon the petition hereinafter described, he has been treated upon three hundred and three different days by Gertrude R. Doyle as masseuse. Her bill for services amounts to \$900.

The present proceeding was begun by the petition of the masseuse for the approval of her charges under St. 1911, c. 571, Part III, s. 13, as amended by St. 1914, c. 708, s. 12, and St. 1917, c. 297, s. 12, now contained in G. L., c. 152, s. 13. This section of the statute provides that the fees of attorneys and physicians and charges of hospitals for services under the act shall be subject to the approval of the Industrial Accident Board.

A petition by the masseuse for the approval of her bill was filed with the Board and heard by a single member, upon whose report of the facts the Board found that the nature of the injury constituted "an unusual case" (St. 1911, c. 571, Part II, s. 5, as amended by St. 1914, c. 708, s. 1, and St. 1917, c. 198, now G. L., c. 152, s. 30), inasmuch as it resulted in complete atrophy of the right hand and arm of the employee, that the amount was a reasonable charge for the services, and ordered its payment by the insurer.

The procedure in this case was correct. The statute did not provide for the decision of a single member which was subject to review. The procedure differs materially from that specified when the insurer and the injured employee fail to reach an agreement as to the compensation of the latter. In such cases, the claim is assigned for hearing by a single member of the Board, whose "decision . . . together with a statement of the evidence, his findings of fact, rulings of law, and any other matters pertinent to questions arising before him . . . (is) filed with the Industrial Accident Board. Unless a claim for review is filed by either party within seven days," the decision of the single member is enforceable under the statute. St. 1911, c. 751, Part III, s. 7, as amended by St. 1912, c. 371, s. 12, and St. 1917, c. 297, s. 4, G. L., c. 52, s. 8. In the proceedings now considered no decision of a single member was made. All that such member was authorized to do was after hearing to "report the facts . . . for decision." See *Hazen's Case*, 226 Mass. 292. Inasmuch as the single member made no "decision," the statutory provision for a review by the Board was wholly inapplicable.

We do not find it necessary to decide whether the employee's injury properly could have been found to constitute "an unusual case," or whether payment for medical services for a period commencing nearly

a year and a half after the accident could rightly have been ordered.

The statute provides for the payment of only physicians and hospital. Under the procedure now considered, that which is to be furnished (St. 1911, c. 751, Part II, s. 5, as amended by St. 1914, c. 708, s. 1, and St. 1917, c. 198, now G. L., c. 152, s. 30) is "adequate and reasonable medical and hospital services, and medicines, where they are needed." Detailed provisions as to the selection of a physician are set forth. While the term, medical services, being used without limitation, may be susceptible of a broad construction, the statutes cited clearly indicate that those words, as therein used, are restricted to medical assistance rendered by the physician or under his direction and control. See *People v. Pier-son*, 176 N. Y. 201.

It is not necessary to decide whether massage may be employed in connection with or as a part of treatment by a physician and under such circumstances properly classed as medical services. The massage performed, so far as it appears solely upon the employee's request and not as a part of treatment by a physician, was not medical services within the statute, and the insurer is not liable therefor in this proceeding.

The decree of the Superior Court ordering the insurer to pay to the petitioner the amount of her charges must be reversed, and a decree entered dismissing the petition. *So Ordered.*

LEGISLATIVE HEARINGS.

VACCINATION matters pro and con have been given one hearing. The anti-vaccinationists have been very much more dignified and reasonable in their contention than in previous years. The attack centered on the proposition that there should not be an invasion of personal rights but rather that vaccination should be an elective and not a compulsory measure. In addition to testimony of representatives of the Medical Liberty League and anti-vaccinationists, several members of the House and Senate spoke against compulsory measures, although it is known that some objectors employ vaccination in their own families. These people seem to be indifferent to the fact that society at large may logically demand of the citizens surrender of individual independence in favor of community benefit. Under this fundamental conception of community life the State may even demand any sacrifice of individual opinion for the safety of the composite. These objectors want a certain exemption from the burden of common responsibility.

The vaccination side was ably handled by the President of the Society, the Commissioner of Public Health, Mr. Dublin of the Metropolitan Life Insurance Co., and others.

Mr. Dublin introduced a new quality of evidence in the results of studies maintained by the Metropolitan Life Insurance Co., for this organization is interested in a dispassionate consideration of the whole question from a business standpoint. He showed that this Company,

through its aids to preventive medicine, had been instrumental in reducing the mortality rate to an appreciable degree, probably amounting to not less than one hundred thousand lives. He went on to show that smallpox was a constant menace, greater in the states where vaccination laws were inadequate or not well enforced as shown in the country west of the Mississippi and if the bars are let down in Massachusetts the same conditions would soon exist which are found in California, Oregon and other western states. A decision on the question of vaccination could not be left to the general public, and the Legislature must decide whether we shall have smallpox or not. The Company is not interested in any fad, but is concerned in the truth relating to mortality and morbidity.

In the afternoon the State Department of Public Health exhibited a film under the title "One Scar or Many," showing the salient features of smallpox and the protective measures used to control it.

The bill for the extension of vaccination to private schools was taken care of by Dr. Bartol and several other speakers.

Everybody must realize that the hearing is the preliminary skirmish. The real fight will come in the House and Senate. Members of the Legislature, as a class, mean to vote for the best interests of the state, but they cannot be expected to comprehend a public health measure unless the subject is explained.

The bill to regulate the hours of nurses in hospitals has been heard and it was found that the proponent intended to have the provisions apply to state institutions, so that unless someone is interested to push it as printed there will be, it is expected, little prospect of its serious consideration.

House 751, designed to permit inmates of insane hospitals to send out uncensored letters, brought before the committee a number of persons who seemed to be mentally unbalanced. There appear to be some people in every community who are by nature suspicious and are influenced by the complaints of friends who are insane, and really believe that our insane wards are abused. A kindly interest in these unfortunates would lead to the exercise of care over correspondence, both for the purpose of protecting the recipient as well as to safeguard the sender from an exhibition of a deranged mind. The arguments against the bill are almost unnecessary, but the contention that the proponents of the bill ought to be subjected to an investigation of their mental stability may be well founded.

The bill for the registration of midwives was considered February 8. The arguments presented in favor of this measure were presented by those who felt that since the midwife is

actually doing work, she should be licensed and regulated and that by this method the incompetent would be eliminated and the people better served.

The Hampden County Medical Society, through its secretary, endorsed the bill, as did several physicians from Springfield and other parts of the state.

The opponents of the bill felt that the question of obstetrics is a purely medical one and that it would be unwise to legalize the practice of those who have a very limited medical education, and the general endorsement of the custom of employing midwives might postpone the more general adoption of efficient prenatal work.

House bill 532, designed to remove the restriction relating to the appointment of members of the Board of Registration in Medicine, was actively opposed by a representative of the osteopathic school who feared that if the law left the governor free to appoint a larger representation of any one medical society his school might be "frozen out."

A Mr. Cox, counsel for a man who has been suspected of unethical practice, also opposed the bill. He is the petitioner for a bill which, if enacted, would make a lawyer the Secretary of the Board of Registration in Medicine.

The arguments in favor of the bill are founded on the common understanding that there should be little differences in schools of medicine, but that all physicians should have an understanding of the fundamental sciences on which medicine is built, and that the selection of a Board of Medical Examiners may at this time be made without reference to sectarian differences.

The bill to provide for the registration of medical students is designed to protect those students that are assigned to the study of cases, for threats have been made to prosecute such students under a complaint that such work may be contrary to the law. This bill was advocated by the petitioner and the Dean of Boston University Medical School.

Both Harvard and Tufts Medical Schools omitted sending representatives to speak in favor of this bill. One can hardly understand the reason for this evidence of lack of interest in a measure designed to protect medical students.

The effort to maintain or extend the Daylight Saving law was indorsed by Dr. William R. P. Emerson, R. V. Spencer, representing the Massachusetts Tuberculosis League, and others. Dr. Emerson said: "Nothing which medical science has discovered, can compare with sunlight and pure air in treatment of a disease, such as tuberculosis, or in curing skin diseases or healing wounds.

Railroad officials and the farmers seem to be the most effective objectors to Daylight Saving.

It is significant that the New England Shoe and Leather Association are on record in favor of Daylight Saving, probably not as a health measure but because longer hours of daylight will result in wearing out more shoes. Proponents of health measures might use this as an argument, because the wearing out of footwear promotes wholesome exercise.

LEGISLATIVE MATTERS.

NARCOTIC DRUG CONTROL.

THE hearing February 13 covered the questions relating to better control of the narcotic drug problem.

Testimony submitted tended to show that many addicts succeed in evading the law, through the use of Seth Arnold's Balsam and Paregoric, which are being sold quite freely by druggists. The use of morphine and cocaine is provided for by peddlers, the supply coming in both by smugglers from Canada and European countries. It was shown that the profits are enormous, for an ounce of morphine costs the distributors from about ten to forty-five dollars, in some instances, and an ounce retailed may bring in more than two hundred dollars. Mr. Chase, of the Watch and Ward Society, testified that in three days agents of this Society secured twenty-six samples of opium preparations, sold by thirteen druggists, but in order to secure the sale, misleading statements had to be made, which raised the question as to the liability of the purchaser; hence prosecutions could not be made. The contention was made that the habit-forming drugs are being sold so freely by druggists that more harm is being done in this way than by the bootleggers. A representative of the Federal Government supported many statements made by Mr. Chase, and argued that since there are not adequate Federal means for controlling the traffic, the State laws could be improved so that less harm would be done. Several members of the Committee were very much interested in the subject and asked many questions, so that there was a complete explanation of the dangers incident to drug addiction. Other members of the legislature should be informed of the reasons for better control of the distribution of narcotic drugs, because the dangers incident to the use of these habit-forming poisons extend beyond the individual and involve criminal behavior and a definite burden on society.

THE CHICAGO CONGRESS.

THE great importance of the Congress on Medical Education, Medical Licensure, Public Health, and Hospitals, which has been held in Chicago each winter for several years, is not,

in all probability, fully realized by the majority of physicians, but the subjects discussed and recommendations presented promote, to a large degree, understanding of the difficulties which are to be met by medical educators and health officials.

The next sessions will be held March 6th to 10th, inclusive, in the Florentine Room of the Congress Hotel. The meetings devoted to medical education will be presided over by Arthur Dean Bevan, Chairman of the Council on Medical Education and Hospitals of the A. M. A., and those devoted to health and public instruction, by Dr. Victor C. Vaughan. The Association of Medical Colleges will also hold meetings, and there will be conferences on hospital service.

These meetings are intensely interesting to all persons concerned in medical education and administration of other matters vital to medical progress.

The addresses are by men who are authorities on the subjects under discussion, and the debates bring out all matters about which there are differences of opinion. Every physician who can afford to make the break, would find much profit and entertainment through attendance upon these meetings. Those who are inclined to question the motives and methods of the A. M. A. officers certainly ought to attend, because one would meet those who are influential in forming the policies of the Association, and these men are always ready to discuss matters of interest.

MENTAL HYGIENE.

The public interest in mental hygiene, along the lines suggested in a recent JOURNAL editorial, has materialized, as shown by the attendance, and contributions pledged at the meeting held in Symphony Hall February 8th.

This campaign has been inaugurated by the National Society for Mental Hygiene. Governor Cox presided and addresses were delivered by Dr. Thomas W. Salmon of Columbia University, Dr. William A. White, of Washington, D. C., Dr. C. Macfie Campbell, of Boston, and Dr. Haven Emerson, formerly Health Commissioner of New York. Governor Cox emphasized the facts which have been published in the JOURNAL in allusions to the large appropriations made by this Commonwealth for the care of sufferers from mental diseases, and referred to the belief that if one half of these cases could have been properly cared for in the curable stage these unfortunates would have been comparatively well.

Boston's quota to this campaign fund is \$35,000 a year for five years.

This is one of the most important departments of preventive medicine, but in order to secure the best results the support of the gen-

eral public must be given. The problems can, to a great extent, be understood by the laity. The laity should contribute liberally to the fund.

NEWS NOTES.

HARVARD MEDICAL SOCIETY.—A meeting was held in the Peter Bent Brigham Hospital Amphitheatre, Tuesday evening, February 14. Program: "Ovarian Hematomas of Endometrial Type (perforating hemorrhagic cysts of the ovary) and Implantation Adenomas of Endometrial Type." Speaker, Dr. John A. Sampson, Albany, N. Y.

DR. ROBERT N. NYE, formerly research assistant to Dr. F. B. Mallory, has accepted the position of assistant director of the Division of Biologic Laboratories of the Massachusetts State Department of Public Health.

DOCTOR FOR 50 YEARS.—Dr. Augustus L. Chase, of North Main Street, Randolph, Mass., the oldest practising physician in point of service in this district, recently observed the 50th anniversary of his admission to the practice of medicine.

CANCER NOTES.—The Northwestern Mutual Life Insurance Company has prepared a leaflet entitled "Facts about Cancer," in which the essential facts which the laity should know are set forth under fourteen paragraphs. This leaflet is endorsed by the American Society for the Control of Cancer, and should be in the hands of physicians for distribution. Cancer work should not stop with the campaign of last autumn. This great, imperfectly known (etiologically) cause of death should be placed before the people constantly.

DURING the week ending February 11, 1922, the number of deaths reported was 219 against 201 last year, with a rate of 14.95. There were 29 deaths under one year of age against 23 last year.

The number of cases of principal reportable diseases were: Diphtheria, 65; scarlet fever, 47; measles, 124; whooping-cough, 12; tuberculosis, 43.

Included in the above, were the following cases of non-residents: Diphtheria, 3; scarlet fever, 18; tuberculosis, 5.

Total deaths from these diseases were: Diphtheria, 2; scarlet fever, 1; whooping-cough, 1; tuberculosis, 13.

Included in the above, were the following cases of non-residents: Diphtheria, 1; scarlet fever, 1; tuberculosis, 3.

Trichinosis, 4 cases; 2 deaths.

THE CUTTER LECTURES ON PREVENTIVE MEDICINE were given at the Harvard Medical School by Alfred F. Hess, Clinical Professor of Pediatrics, University and Bellevue Hospital Medical College, New York City. Subjects: "Nutritional Disorders in the Light of Recent Investigations," on Tuesday, February 14, 1922; "Newer Aspects of the Rickets Problem," on Wednesday, February 15, 1922.

These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine and that they should be delivered in Boston and be free to the medical profession and the press.

THE SPRINGFIELD ACADEMY OF MEDICINE.—

A public meeting will be held March 7th in the Central High School Hall, in Springfield, Mass. The address will be given by Dr. LaPlace. His subject, "Louis Pasteur," holds as much interest for laymen as for the profession, and for that reason every effort should be made to bring this meeting to the attention of the public.

The February meeting of the Springfield Academy of Medicine was held Tuesday, February 14, 1922. Dr. Lawrason Brown of Saranac Lake read the paper of the evening, entitled "The Value of X-rays in Pulmonary Tuberculosis."

Following are the officers and committees for 1921-1922: President, Ralph B. Ober, 76 Maple Street; First Vice-President, Orland R. Blair; Second Vice-President, John M. Tracy; Secretary, Allen G. Rice, 33 School Street; Treasurer, Eoline C. Dubois, 2 Temple Street.

Board of Directors: H. W. Van Allen, F. B. Sweet, Philip Kilroy, T. G. Alcorn, E. A. Bates, J. M. Birnie, R. S. Benner, G. D. Weston, L. D. Chapin, E. L. Davis.

Board of Censors: R. A. Kinloch, F. D. Jones, H. L. Smith, C. A. Schillander, F. K. Dutton.

House Committee: H. W. Van Allen, C. F. Lynch, H. Buddington.

Library Committee: A. C. Eastman, George Coreoran, H. C. Martin.

Registry Committee: J. M. Birnie, Seth Lewis, J. M. Tracy.

Legislative Committee: A. C. Eastman, H. W. Van Allen, H. L. Smith.

ESSEX NORTH REPORTERS.—In accord with the suggestion of the Editor of *The Boston Medical and Surgical Journal*, Essex North District Medical Society has arranged a system by which all parts of the District are covered in the matter of reporting news items to the official organ of the Massachusetts Medical Society, by the following plan.

The Secretary of the District Society was

elected as reporter and the following members have accepted positions as sub-reporters covering their respective territories.

Haverhill, F. B. Pierce, M.D., of Haverhill. *Georgetown and Boxford*, E. M. Hoyt, M.D., of Georgetown.

West Newbury, W. L. Oreunt, M.D., of West Newbury.

Methuen, R. V. Baketel, M.D., of Methuen. *North Andover*, F. S. Smith, M.D., of North Andover.

Merrimac, F. E. Sweetsir, M.D., of Merrimac.

Andover, W. D. Walker, M.D., of Andover. *Groveland*, E. G. Bagnall, M.D., of Groveland.

Newburyport and Newbury, R. L. Toppan, M.D., of Newburyport.

Rowley, F. L. Collins, M.D., of Rowley.

Amesbury and Salisbury, O. R. Mudge, M.D., of Amesbury.

Lawrence, J. F. Burnham, M.D., of Lawrence.

The Secretary's office will act as clearing house for items of this kind.

J. FORREST BURNHAM, M.D., Secretary.

AMESBURY.—In the latter part of January, while making calls with his driver, Dr. P. J. Mullen was thrown from his sleigh and fractured his shoulder. He is progressing favorably.

CERTIFICATE OF REGISTRATION SUSPENDED.—

At a meeting of the Board of Registration in Medicine, held February 15, 1922, the registration of George A. McEvoy was suspended for one month.

FRANKLIN DISTRICT MEDICAL SOCIETY.—Dr.

J. A. Mather of Greenfield, the President, has appointed Dr. B. P. Croft and Dr. C. F. Canedy of Greenfield, and Dr. W. A. Smith of Shelburne Falls, as a committee to investigate the matter of certain charges made as to nurses "practising medicine." The question was brought up by Dr. Croft at the last meeting of the Society, held in January, on the following question: "Are the so-called District, Industrial, Red Cross, or Social Service nurses encroaching on the legitimate work of the regular physicians, and if so, can such practices be corrected by a conference with as many of these nurses in our community as are accessible, whereby the legitimate work of both nurse and physician can be thoroughly discussed and a plan to prevent encroachments outlined, to the mutual advantage of both parties, and with no detriment to the health of the public?" It was moved that "a committee of three be appointed to hold a conference with representatives of nurses in Franklin County to attempt an answer" to this question.

The fact that a physician in one locality had made an attempt to get action from the Grand Jury as to a nurse's practising medicine, and that there have been specific charges made in various letters to the JOURNAL from another physician in the same locality, has stirred up a good deal of feeling. This has not operated to promote the best relations between physicians and nurses elsewhere in the county. The canvass made among the physicians several months ago was a beginning in the endeavor to interest them toward better coöperative relationships with the nurses who have recently gone into such districts as agents of welfare organizations. The region is certainly not overstocked with physicians, and if these men can be gotten together and so organized as to have more of a directing influence in welfare work, and their activities be satisfactorily distributed, the best interests of the public and the profession will be assured.

PAUL W. GOLDSBURY, M.D., *Reporter*.
Deerfield, Mass., Feb. 13, 1922.

HAMPSHIRE DISTRICT AFFAIRS—Hampshire District Medical Society. Dr. William J. Collins, of Northampton, sailed on the S.S. "Empress of France," from New York, on February 11, for an extended tour of the Mediterranean which will include Egypt, the Nile Valley and the Holy Land. While in Europe he will join his brother, Dr. J. D. Collins, for the return trip, and both expect to resume practice on May 1.

The Northampton Board of Health concluded a very successful demonstration of immunizing children with toxin-antitoxin, on February 1. A clinic was opened during the Christmas vacation offering free inoculations to all parents who desired to protect their children against diphtheria, including Schick tests to any who desired. About 2000 children had the three injections required, and the demand was so urgent that the clinic was continued under the direction of the School Physician, Dr. J. G. Hanson. The clinic is entirely voluntary, but the response has been spontaneous, parents being eager to take advantage of the measure recommended by medical authorities which will prevent diphtheria. A great majority of the children of Hadley have already been immunized by Dr. F. H. Smith. The selectmen of Williamsburg have voted to open a clinic under the direction of Dr. J. G. Hayes and Dr. C. H. Wheeler. Easthampton and Amherst are considering the establishment of similar measures at an early date.

Dr. T. F. Corriden has opened an office in Central Chambers, Northampton. Dr. Corriden was formerly resident surgeon at the Carney Hospital, Boston, for two years. Dr. F. W.

Doyle has opened an office in the Sherwin Block, Northampton. Dr. Doyle formerly practised in South Deerfield for several years.

Dr. G. J. Hickey, of Florence, is enjoying his annual outing in Florida for the winter months.

Miscellany.

HARVARD MEDICAL SCHOOL.

At a meeting of the Faculty of Medicine held on Friday, February 3, it was voted to adopt the principle laid down by the Correlation Committee that not more than 900 hours of fixed exercises be given in each of the first three years. The numbers originally were: first year, 1216; second year, 1271; third year, 1252.

It was further voted that, so far as possible, the schedule of the first, second and third years be so arranged as to leave Tuesday and Thursday afternoons free. This free time will allow the students to follow up lines of work in which they are interested, and go to voluntary courses. It is thought that students becoming interested in blood studies, through medicine in the clinical years, may like to take work in the chemistry department, and thus keep themselves acquainted with various advances made since they took the first year chemistry course; and that many similar instances may occur. Students who work more slowly than the average and who feel the pressure to their great disadvantage under the present arrangement, can use these free afternoons for additional work in the regular courses.

Finally, it was voted that the arrangement of hours for the first two years, proposed by the Correlation Committee, be approved. The details of the third and fourth year programs have not been finally arranged. It is possible that the number of hours in the fourth year will be left unchanged, since in the clinical courses lasting a whole, or even a half month, there is considerable freedom allowed as to the details of work.

Further announcement will be made when the third and fourth years are arranged, which will not be before the second week in March. The Faculty has asked the Corporation to authorize an R. O. T. C. Unit at the School. The Corporation has appointed Colonel George E. Bushnell as Professor of Military Science and Tactics at the Medical School; he is now awaiting orders from the Surgeon-General's Office detailing him to this Unit.

DIPHTHERIA IN CHICAGO.

ALTHOUGH the Chicago Commissioner of Health has made a determined effort to control diphtheria, he has expressed disappointment at the failure to secure the beneficial results which were to be expected.

The lack of progress is apparently due to inefficient coöperation on the part of the profession, and understanding by the laity. A diphtheria commission has been created composed of fifty leading people from the medical profession, newspaper world, educational circles and social workers. This commission appointed a medical committee to study and make suggestions. A report of this committee has been made and the important recommendation is for better coöperation of the medical profession in the use of toxin-antitoxin.

The commissioner has determined to put the responsibility where it belongs. This, according to statements made in the Bulletin, means that whenever a child dies of diphtheria there has been negligence on the part of the parents or the physician or both. Investigations made by the Department of Health seem to warrant these conclusions. The Department has adopted the custom of calling physicians before it for the purpose of fixing the blame. This action shows that the Department is alive and active.

It is hoped that there will be no occasion for such activity in Massachusetts, but the mortality from diphtheria warrants suspicion.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY. MEDICAL SECTION MEETING, DECEMBER 29, 1921.

VALUE OF THE DUODENAL TUBE IN DIAGNOSIS AND TREATMENT.

BY DR. CHESTER M. JONES.

DISCUSSION.

DR. FRANKLIN W. WHITE: Dr. Jones has presented this subject in a very rational, sensible and conservative way. It is a subject about which there may be great difference of opinion. In regard to some of the technical details of getting in the tube, I think the method of intubing, if a fluoroscope is available, is quite simple and quick, and it may be done in office work in a short time. If the fluoroscope is not available, it is rather tedious. We have intubed 300 or 400 cases in the last year, and it took from 20 to 30 minutes in 80 per cent. of the cases. In the other 20 per cent., we took a good deal longer. I am speaking of the ambulatory cases. Patients in bed for

jaundice or extensive adhesions will require a much longer time. As a rule, we haven't found that ptosis made very much difference. I have been surprised to find that what has bothered us most in getting the tube in has been extensive adhesions, and in jaundice, the nausea and vomiting, and lack of peristalsis. This angulation which Dr. Jones showed in one of his charts has some value in showing an abnormal duodenum, but it is really a much more striking deformity in the ordinary x-ray plate. We must remember that some of these peculiar curves may be merely personal variations and not disease conditions at all. With regard to the study of the pancreatic juices, I feel sure the tube will be used in the future more than in the past. Regarding the emptying of the gall-bladder, about which Dr. Lyons felt so sure a year ago, my feeling is that this emptying has been quite variable. As to segregating the bile from different parts of the biliary tract, I feel exactly as Dr. Jones has said. We have only found a few clusters of cells which have been sufficient to be diagnostic. Two cases showed so abundant that we were justified in a diagnosis of stones. As a rule, the stone cases have been difficult to help with this method. The gall-bladder is blocked off with obstruction of the cystic duct, so that in a stone case, when we draw off bile, it is practically normal. This method of using the duodenal tube is an elaborate one and needs an x-ray control for very accurate work. In order to be sure that we have material we can count on, we must be sure where the end of the tube is. After going through a large series of cases, it is my opinion that we get something of value in the majority of cases. Pathological cases show pathological bile. The exceptions were the stone cases which were very disappointing, as a group. I have had a chance to observe the effects of treatment in 30 or 40 cases. They were all mild acute infections or mild chronic infections in which we had every reason to believe there were no extensive pathological changes. Our idea was to clean out the biliary passages as well as we could. It seemed to me, without any question, that those patients did better than I have been accustomed to see chronic gall-bladder cases do. This treatment must be used in a limited field. The only ones fair to try at all are the mild, either acute or chronic, cases. There is no doubt that the early papers were too enthusiastic, and a great deal was said about this method that will have to be taken back. I think at the bottom there is something of value.

DR. F. W. PALFREY: As far as my experience goes, I believe that Dr. Jones has made an extremely judicious statement of the state of affairs in connection with the work done hereto. This use of the tube is a method by which we are able to obtain the excretion from

the liver,—the bile,—and it is to be compared with what we have done for years in diseases of the urinary tract. The diagnostic value is uncertain. I hope it may be as great as the diagnostic value of the urine, but it does not seem to promise as much. It is only by such work as that of Dr. Jones that we can see how far the method is of value. I have been much interested in his work on the bile pigments, and on that I have no way of forming an opinion, but I hope it will be of greater value than other methods of examination of the bile. Regarding treatment, I can certainly endorse what he has said as to the value of the tube in certain cases of vomiting. It seems to tide over some patients extremely well. I have often thought a pediatrician might use an infantile tube for the violent vomitings of infancy. As to treatment by the Lyons method, I have wondered whether it might not be possible, in some cases, to accomplish the same results by giving magnesium sulphate by mouth. I would like to ask Dr. Jones if he has ever done this after the tube was in place. I have, and have had, practically the same change as when it was given through the tube. My cases seem to be representative, and I think by this method we may find what the treatment by magnesium sulphate will do.

DR. C. W. MCCLURE: What one is seeking with the duodenal tube is evidence of perversion of function. We know very little about the function of the liver. Taking for granted that bile comes from the liver, secreted or excreted, or both, we have a process which we can say is physiological. In studying the normal, there is no glory. As a matter of fact, no one seems much interested in physiology; but Dr. Jones has made a study of the normal, and I want to compliment him for having done that very thoroughly before he started to study the pathological. To all of us who have used the Lyons method, it does seem to have some value from the diagnostic standpoint, and the colors of the bile seem to be of significance. Dr. Jones' study of the bile pigment gives a rational basis for that belief. When anything is put in the duodenum the bile flows. If water is put in the stomach one color is obtained; if fat or casein is put in, another color obtains, so that various materials do give various colors to the bile. The viscosity of the bile, however, with the same substance varies in the same person from time to time, and in different persons, and in determining the viscosity of the bile, there is a pathological element. Viscosity is a very relative term. In secreting bile, we are working with a physical element, and the relation in which we view colors has a great deal to do with our ability to detect changes in colors. If one allows, in good daylight, the bile to drop from the end of the tube, very frequently changes in the

color of the bile occur within two or three drops; again, the transition is very much less sharp. The spectroscopic examination puts aside very largely the personal element. Of course, a good spectroscope in the pre-war days cost \$600 and is very difficult to use. The hand spectroscope is very delicate, but I think we can devise a method which will take much less technical knowledge. Dr. Jones is studying, at present, certain of the endocrines in the duodenum.

DR. F. B. LUND: I think that the surgeons ought to welcome such interesting and important studies as this, as it certainly helps them and their patients, to have their patients thoroughly studied before operation. The viscosity of the bile is particularly interesting to the surgeon, since it may be so great as to cause all the symptoms of gallstones, and again, in the actual operation, may harass him a good deal by not flowing through his trocar, so he has to cut the gall-bladder and risk the staining, unless he has a very large trocar and a great deal of patience. It stands to reason that having a stone in the cystic duct, we cannot cause bile to come from the gall-bladder into the duodenum by any method used. The gall-bladder, though elastic, has so few muscle fibers in its wall as compared, for instance, with the small intestine, that it would seem to me much more natural not to consider that whatever motion it has was due, not to muscular contraction, but to elasticity. As we compare the thin, fibrous wall of the gall-bladder with the thick, muscular wall of the small intestine, this point of view seems reasonable. Some years ago, in operating on the gall-bladder, we had cultures taken in a good many cases, and the commonest organism we found was the colon bacillus. Sometimes we found pus organisms, and as is well known, in rare cases, the influenza bacillus is the cause of the infection. On the other hand, in actual cholecystitis, we often found sterile bile, and we have found, since then, that the infectious organisms are in the wall of the gall-bladder, and not in the bile; also in bile which has become sterile we may have the organisms locked up in the middle of the gallstones, where they have formed centers of crystallization. The infectious process had started, the stones had formed, and then the infectious process had drained off and left the stones there. Where the cystic duct is stopped up by a stone, no bile can get by this stone into the gall-bladder. Whatever bile has been there is deposited, and then the gall-bladder is filled with clear fluid containing mucus. The same thing happens after long obstruction to the common duct in the branches of the common and hepatic duct. The liver has gone on strike on account of the back pressure, and what bile has been secreted is absorbed. In opening such a common duct, if you find only a little bile, your prognosis

is much better than if the fluid is absolutely clear, and if the bile does not begin to be secreted within a few hours your patient is very sure to die.

The coöperation of the surgeon and physician in such work as this, is going to be of great value, and I want to congratulate the Society on having such an interesting paper.

DR. DANIEL F. JONES: This method was begun with great enthusiasm and everybody thought we were going to be able to diagnose all sorts of conditions in the duodenum and liver, and after this rather false start, I hope it isn't going to be given up entirely. I am sure there is something in it. I have seen some of Dr. Jones' work at the Hospital, and it is of great value. I think one great fault with us American physicians and surgeons is that we start out with these new ideas too enthusiastically and then because they don't give us all that was promised, we give them up. I find that there are very few of these laboratory tests that ought to be given up entirely and I hope this will not be one. Dr. Jones has given us a very excellent paper on this subject. It seems to be more difficult to give much help where stones are not present, where there is nothing but cholecystitis. When stones are present, the diagnosis is comparatively easy, but it is the cases where there are no stones that the diagnosis is difficult.

DR. JONES (in closing): It is quite possible to make a confirmatory diagnosis by giving magnesium sulphate by mouth. Lyons says that it doesn't make any difference whether it goes over the stomach contents or not, but it gives better results by not going this way. As to the viscosity of the bile, it varies a great deal in different conditions. The viscosity varies greatly with the amount of gastric contents. Viscous duodenal contents does not necessarily mean viscous bile. In quite a series of cases I have noticed changes in color which were not visible to the eye, whereas by spectroscopic examination it was perfectly possible, four, five, or even ten, changes above the normal, so that mere gross color changes are not exact. It is true that even with the gall-bladder out you do get B. bile. In explanation of that I offer this, that the gall-bladder wouldn't have been taken out if there had not been cholecystitis. In practically every case, there is an infectious process in the liver. The function is therefore altered and you are going to get dark bile, anyway.

RECENT DEATH.

SEWELL ELLIOTT GREENWOOD, M.D., died at his home in Templeton, February 5, 1922. He was a graduate of Harvard Medical School in the class of 1877, joined the Massachusetts Medical Society in 1881, and settled in Templeton. His name was placed on the retired list in 1919. Dr. Greenwood was 68 years of age.

Correspondence.

THE REACTION OF IMMUNITY.

Mr. Editor:

Mention is often made of repeated failures of vaccination, which require a repetition of the operation, often without a successful result, and I venture to suggest that many of these supposed failures are due to the so-called reaction of immunity and not to impotent vaccine.

The reaction of immunity is described in United States Public Health Reports, Vol. 36, Number 33, and I believe is not generally recognized by the profession.

The reaction shows itself within twenty-four hours after vaccination with a potent vaccine, by the appearance of an areola around the site of the inoculation. The next day a small red, itching, papule appears and the areola has increased. The papule does not become vesicular and disappears on the fourth or fifth day. For this reason, if for no other, the vaccination should be seen on the day following the operation because, if the reaction of immunity occurs, all action has ceased before an ordinary case has begun to "take" and, as a rule, the vaccination is considered to be a failure.

The reaction of immunity occurs more frequently with secondary than with primary vaccinations and may be used as a test of the immunity of a person who has been exposed to smallpox, for if a marked reaction takes place, there is no need to worry over the supposed failure of the protective vaccination.

FRANCIS GEO. CURTIS, M.D.,
Chairman, Newton Board of Health.

RURAL MEDICAL SERVICE.

Dr. John M. Dodson, Dean of the Medical School of the University of Chicago, says regarding the future field of medical practice:

"I am sure that in the great scientific progress of the last two or three decades, we have lost, in the medical profession, a good deal of that splendid spirit of service which is the chief glory of the medical man of the earlier days." "I question seriously whether the family doctor will not, in the future, find his greatest usefulness in the field of preventive medicine, as the health adviser of his clientele, receiving his major compensation in the form of annual fees for keeping his patients well."

Dr. F. B. Sampson, of Creston, Iowa, who has made a unique success in the development of a Greater Community Hospital Association, to serve both town and country says:

"The growing disparity between central and peripheral functioning efficiency of the medical profession, has so far advanced that the congestion on the one hand and the depletion on the other discounts the value of both central and peripheral tissues of the profession. I insist it is time to stress development of peripheral organization and turn to making the fields of need for medical service the field of opportunity for men whose training for medical practice includes the inculcation of inspiration to service as well as information as a means of service."

The drift of physicians from rural sections to large towns and cities can be stayed if rural hospitals and facilities are better organized to meet up with needs of physicians of their special localities. The rural field can be made to attract capable men now crowding metropolitan centres.

PAUL W. GOLDSBURY.

TO WHOM IT MAY CONCERN.

Mr. Editor:

Will you please publish a copy of a certificate from a Registered Nurse as it may interest some of the readers of your Journal and give them some idea of how many of the nurses in Fall River practice medicine. I do not know if this applies all over the state or is just confined to Fall River. Probably some readers may testify about conditions in their vicinity.

(Copy.)

February 6, 1922.

To Whom It May Concern:

This is to certify that Mike Farzak, employed by the Massasoit Mfg. Co., was injured January 26, 1922, and is unable to work. Middle finger of left hand was caught in Card and badly lacerated at the top. In good condition at the present time.

CATHERINE L. SULLIVAN, R.N.

Mr. Farzak was injured January 26, and was treated by the nurse from January 26 to February 8th, inclusive. He was never attended to by any physician. He is a member of a Benefit Society and in order to receive any benefit, he was notified to bring a Doctor's Certificate. The nurse gave him the certificate as printed above, but the Society would not pay him any benefit on a nurse certificate. Therefore he came to me for a certificate.

The condition of the finger at present: There are several linear wounds of the back of the finger and of the finger nail. The tip of the finger is all right, but the palmar surface of the finger is denuded of skin about $\frac{3}{4}$ inch long and $\frac{1}{4}$ inch wide, extending from about $\frac{3}{4}$ inch from the tip of the finger to within a quarter of an inch from the first joint.

Does this certificate concern the people?

Does this certificate concern the Massachusetts State Board of Registration in Medicine?

Does it concern the readers of the BOSTON MEDICAL AND SURGICAL JOURNAL?

Does it concern the Massachusetts Medical Society?

Does it concern the Fall River Medical Society?

Does it concern the Liability Insurance companies?

Does it concern the Industrial Accident Board?

Enclosed find a sworn copy of the certificate.

Very truly yours,

JOHN F. LOWNEY, M.D.,
Fall River.

COMMITTEE ON PUBLIC HEALTH.

Mr. Editor:

The following endorsements to the Resolution passed at a meeting called by the Committee on Public Health of the Suffolk District Medical Society on January 11, 1922, have been received to date:

American Red Cross, Boston Metropolitan Chapter.
Baby Hygiene Association.
Boston Council of Social Agencies.
Boston Dispensary.
Boston Lying-in Hospital.
Boston Tuberculosis Association.
Boston University School of Medicine.
The Children's Hospital.
The Household Nursing Association, Inc., and Training School for Attendants.
Instructive District Nursing Association.
Massachusetts Charitable Eye and Ear Infirmary.
Massachusetts General Hospital.

Massachusetts Homeopathic Hospital.

Massachusetts Homeopathic Society, Boston District.

Massachusetts Society for Social Hygiene.
Maverick Dispensary.

New England Association for Hospital Social Workers.

Norfolk District Medical Society.

Nutrition Clinics for Delicate Children.

Peter Bent Brigham Hospital.

Suffolk District Medical Society.

Tufts College Medical School.

Very truly yours,

GEORGE CHEEVER SHATTUCK, M.D.,
Chairman of the Co-ordinating Committee.

NOTICES.

PUBLIC HEALTH LECTURERS.

LECTURERS FOR THE YEAR 1922.

The Committee on Public Health of the Massachusetts Medical Society has been able during the past three years to arrange with well known specialists in various medical fields to give talks at meetings of the District Medical Societies on subjects of interest and importance to all practitioners. It is a pleasure to announce that a similar arrangement has been made this year and that the gentlemen named below are willing, without expense to the District Society, to give occasional talks of thirty to forty minutes on subjects relating to the promotion of public health, extending opportunity for questions and discussion. It is suggested that medical societies consider meeting at neighboring public institutions, since such meetings have been most successful in the past, particularly at the tuberculosis sanatoria and state hospitals for the insane.

José Penteado Bill, M.D., Doctor of Public Health, Specialty: Preventive Medicine.

Frank C. Dunbar, M.D., Bacteriologist, Instructor in Bacteriology and Pathology, Tufts College Medical School.

Walter E. Fernald, M.D., Superintendent, Massachusetts School for the Feeble-minded.

Timothy Leary, M.D., Professor of Pathology, Tufts College Medical School; Medical Examiner, Suffolk County.

Edwin H. Place, M.D., Physician-in-Chief, South Department, Boston City Hospital. Specialty: Contagious Diseases.

C. Morton Smith, M.D., Chief of Department of Syphilis, Massachusetts General Hospital.

George Gilbert Smith, M.D., Assistant in Department of Genito-Urinary Diseases, Massachusetts General Hospital. Specialty: Genito-Urinary Diseases.

Lesley H. Spooner, M.D., on Staff of Out-Patient Department, Massachusetts General Hospital. Specialty: Specific Diagnosis and Treatment of Pneumonia.

William C. Woodward, M.D., Health Commissioner, City of Boston.

George H. Wright, D.M.D., Lecturer on Dental Hygiene, Harvard Dental School. Specialty: Dental Surgery.

Thomas F. Kenney, M.D., Director of School Hygiene, City of Worcester. Specialty: Full time School Health Officer.

Secretaries of District Medical Societies writing to ask for these lecturers will kindly designate the topic, the place and the hour of meeting as well as the name of the desired speaker, thus eliminating unnecessary correspondence. Please address communications to the Secretary of the Committee, Annie Lee Hamilton, M.D., 164 Longwood Ave., Boston 17.

A COURSE IN MEDICINE AND PATHOLOGY AT MASSACHUSETTS GENERAL HOSPITAL.

A course in "Medicine and Pathology" will be given in the Amphitheatre of the Pathological Laboratory by Dr. William H. Smith, Visiting Physician of the Massachusetts General Hospital, and Dr. Oscar Richardson, Assistant Pathologist of the Massachusetts General Hospital.

The complete clinical records of cases coming to autopsy will be presented by Dr. Smith, who will discuss the differential diagnosis. The pathological findings will then be stated, the organs demonstrated and the pathology of the cases discussed by Dr. Richardson. This will be followed by a general discussion of the cases, viewed in the light of the completed records, and attention will be called to the newer diagnostic methods and to the broad principles of treatment involved. Microscopical preparations and lantern slides will be used when necessary.

There will be nine exercises, on Wednesdays, in the months of March and April, between 3.15 and 5.15 P.M.

The course is open to graduates in medicine and medical students of the third and fourth years, subject to their acceptance by the hospital.

Women admitted.

Given in connection with the Harvard Graduate School of Medicine.

A fee of \$5.00 will be charged for the course. Application should be made to

FREDERIC A. WASHBURN, M.D., *Director*,
Massachusetts General Hospital, Boston, Mass.

BOSTON SANATORIUM, FORMERLY BOSTON CONSUMPTIVES' HOSPITAL. Name changed by City Ordinance, January 18, 1922. Trustees' office, 1001 City Hall Annex. Hospital, 240 River Street, Mattapan. Men, women and children, residents of Boston, in all stages of pulmonary tuberculosis, are admitted. Patients with non-pulmonary tuberculosis are admitted when there is room for them. Apply to the Superintendent of the Hospital, Dr. A. J. White, or to the Superintendent of Nurses of the Out-Patient Department, Miss Gardner, for admission. Out-Patient Department, 13 Dillaway St., Boston. Open on Mondays, Wednesdays, Fridays and Saturdays from 9 to 11 a.m., and on Monday evenings from 7 to 9 p.m. On Saturday mornings there is a special clinic for children. Telephones: Hospital, Milton 2310; O.P.D., Beach 3430 and 2040. Milton cars from Forest Hills pass the Hospital.

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at Masonic Temple, 171 Warren St., Roxbury, February 28, 8.15 p.m. Telephone Roxbury 50089. Business. Communications: Blood Cultures in the Diagnosis of Disease, F. P. McCarthy, M.D.; The Physician and the Laboratory, F. H. Dunbar, M.D. Refreshments after the meeting. C. D. Knowlton, President; Bradford Kent, M.D., Secretary, 798 Blue Hill Avenue, Dorchester.

A CLINICAL MEETING will be held in the Auditorium of the Beth Israel Hospital on Tuesday evening, February 28, at 8.15 p.m. Program: "Traumatic Surgery and Infections of the Hand." Drs. Torr W. Harmer, Arthur W. Allen, Carl Bearse. Refreshments served. Physicians invited.

THE HARVARD MEDICAL SCHOOL RESEARCH CLUB meeting to be held on Friday, February 24th, at 12:30

o'clock, will be addressed by Dr. W. D. Reed on "The Production of Heart Murmurs"; Dr. W. R. Ohler, on "The Practical Value of Glucose Tolerance Tests"; Dr. Thomas E. Buckman, on "Hemocidal Properties of the Blood." Each of the above talks will be of ten or fifteen minutes' duration, and will be held in the Amphitheatre, Building A, Harvard Medical School.

OUT-PATIENT STAFF MEETING.—The fourth monthly meeting of the Out-Patient Staff of the Massachusetts General Hospital will be held in the Lower Out-Patient Amphitheatre on Wednesday, March 1st, at noon. Following is the program: "Syphilis as an Etiological Factor in Nephritis and Diabetes," Dr. H. D. Lloyd; "Pityriasis Rosea as a Complication in Early Syphilis," Dr. George A. Dix; "Development of Neurosyphilis during Antisyphilitic Treatment," Dr. H. C. Solomon; "Syphilis as a Factor in Hypertension," Dr. Howard Jackson; "Therapeutic Tests in Suspected Syphilis," Dr. Austin W. Cheever; "A Case Report: Scabies, Syphilis, Arspenamine Dermatitis and Industrial Dermatitis," Dr. Guy Lane; "Some Important Minor Signs of Late Congenital Syphilis," Dr. C. Morton Smith. Physicians, nurses and students are cordially invited.

The Massachusetts Medical Society

The Secretary's report of the Stated Meeting of the Council held February 1, 1922, at the Boston Medical Library, will appear in full in next week's issue of the JOURNAL, dated March 2, 1922.

NOTICE TO THE FELLOWS OF THE MASSACHUSETTS MEDICAL SOCIETY.

CHANGES OF ADDRESS.

In view of the action of the Council, February 1, 1922, in advancing Librarian E. H. Brigham to the honorable position of Librarian Emeritus, after a continuous service of thirty-seven years, in future, all communications as to the membership, especially changes of residence and address, should be sent to the Secretary of the Society, who keeps a constantly corrected official list of the Fellows and their addresses.

SURGICAL SECTION SUFFOLK DISTRICT MEDICAL SOCIETY.

A MEETING of unusual interest will be held February 23 at the Medical Library, at 8 P.M. Dr. Joseph C. Bloodgood, of Baltimore, will speak on Border-Line Breast Tumors. There will be lantern-slide illustrations.

[NOTE: The attention of the profession is called to the small attendance at previous meetings. At a recent meeting, Dr. Downs, of New York, had an audience of only forty. About a year ago, when Dr. Gibbon, of Philadelphia, spoke in Boston, only twenty-five attended. Boston should extend a courteous welcome to visiting men from other cities. Eminent men should have the encouragement of a large audience.—EDITOR.]